

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Thallium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.831149
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.046	Data not normal at 5% significance level		
Maximum	0.43			
Mean	0.1651	95% UCL (Assuming Normal Distribution)		
Median	0.0955	Student's-t UCL		0.243807
Standard Deviation	0.135776			
Variance	0.018435	Gamma Distribution Test		
Coefficient of Variation	0.822383	A-D Test Statistic		0.526908
Skewness	1.100284	A-D 5% Critical Value		0.736741
Gamma Statistics				
k hat	1.840907	Data follow gamma distribution		
k star (bias corrected)	1.355302	at 5% significance level		
Theta hat	0.089684			
Theta star	0.121818	95% UCLs (Assuming Gamma Distribution)		
nu hat	36.81814	Approximate Gamma UCL		0.275705
nu star	27.10603	Adjusted Gamma UCL		0.30265
Approx.Chi Square Value (.05)	16.23184			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	14.78672	Shapiro-Wilk Test Statistic		0.913197
Log-transformed Statistics				
Minimum of log data	-3.079114	Shapiro-Wilk 5% Critical Value		0.842
Maximum of log data	-0.84397	Data are lognormal at 5% significance level		
Mean of log data	-2.096754			
Standard Deviation of log data	0.803559	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.645707	95% H-UCL		0.351252
		95% Chebyshev (MVUE) UCL		0.35054
		97.5% Chebyshev (MVUE) UCL		0.431648
		99% Chebyshev (MVUE) UCL		0.59097
95% Non-parametric UCLs				
		CLT UCL		0.235723
		Adj-CLT UCL (Adjusted for skewness)		0.251686
		Mod-t UCL (Adjusted for skewness)		0.246296
		Jackknife UCL		0.243807
		Standard Bootstrap UCL		0.232523
		Bootstrap-t UCL		0.29101
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL		0.257403
		Percentile Bootstrap UCL		0.237
		BCA Bootstrap UCL		0.2459
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		0.352254
		97.5% Chebyshev (Mean, Sd) UCL		0.433235
		99% Chebyshev (Mean, Sd) UCL		0.592308

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Thorium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.813959
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	2.3	Data not normal at 5% significance level		
Maximum	13.8			
Mean	5.4	95% UCL (Assuming Normal Distribution)		
Median	4.7	Student's-t UCL		7.376402
Standard Deviation	3.409464			
Variance	11.62444	Gamma Distribution Test		
Coefficient of Variation	0.631382	A-D Test Statistic		0.309442
Skewness	1.871414	A-D 5% Critical Value		0.730436
Gamma Statistics		K-S Test Statistic		0.172466
k hat	3.625067	K-S 5% Critical Value		0.268056
k star (bias corrected)	2.604213	Data follow gamma distribution		
Theta hat	1.489628	at 5% significance level		
Theta star	2.073563	95% UCLs (Assuming Gamma Distribution)		
nu hat	72.50133	Approximate Gamma UCL		7.704586
nu star	52.08427	Adjusted Gamma UCL		8.211826
Approx.Chi Square Value (.05)	36.50488			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	34.25	Shapiro-Wilk Test Statistic		0.95986
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.842
Minimum of log data	0.832909	Data are lognormal at 5% significance level		
Maximum of log data	2.624669	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	1.542176	95% H-UCL		8.221893
Standard Deviation of log data	0.545696	95% Chebyshev (MVUE) UCL		9.434256
Variance of log data	0.297784	97.5% Chebyshev (MVUE) UCL		11.20731
		99% Chebyshev (MVUE) UCL		14.69014
95% Non-parametric UCLs				
		CLT UCL		7.173427
		Adj-CLT UCL (Adjusted for skewness)		7.855195
		Mod-t UCL (Adjusted for skewness)		7.482744
		Jackknife UCL		7.376402
		Standard Bootstrap UCL		7.076307
		Bootstrap-t UCL		9.166741
RECOMMENDATION		Hall's Bootstrap UCL		15.95418
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL		7.18
		BCA Bootstrap UCL		7.78
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		10.09962
		97.5% Chebyshev (Mean, Sd) UCL		12.13315
		99% Chebyshev (Mean, Sd) UCL		16.12763

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Titanium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.924165
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	186	Data are normal at 5% significance level		
Maximum	648			
Mean	378	95% UCL (Assuming Normal Distribution)		
Median	350	Student's-t UCL		473.8617
Standard Deviation	165.3696			
Variance	27347.11	Gamma Distribution Test		
Coefficient of Variation	0.437486	A-D Test Statistic		0.270934
Skewness	0.470369	A-D 5% Critical Value		0.728784
Gamma Statistics				
k hat	5.758765	Data follow gamma distribution		
k star (bias corrected)	4.097802	at 5% significance level		
Theta hat	65.63908			
Theta star	92.24458	95% UCLs (Assuming Gamma Distribution)		
nu hat	115.1753	Approximate Gamma UCL		498.9415
nu star	81.95604	Adjusted Gamma UCL		524.2467
Approx.Chi Square Value (.05)	62.09021			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	59.09314	Shapiro-Wilk Test Statistic		0.939282
Log-transformed Statistics				
Minimum of log data	5.225747	Shapiro-Wilk 5% Critical Value		0.842
Maximum of log data	6.473891	Data are lognormal at 5% significance level		
Mean of log data	5.845565			
Standard Deviation of log data	0.450947	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.203353	95% H-UCL		528.9667
		95% Chebyshev (MVUE) UCL		617.3515
		97.5% Chebyshev (MVUE) UCL		720.6847
		99% Chebyshev (MVUE) UCL		923.6628
95% Non-parametric UCLs				
		CLT UCL		464.0167
		Adj-CLT UCL (Adjusted for skewness)		472.3282
		Mod-t UCL (Adjusted for skewness)		475.1581
		Jackknife UCL		473.8617
		Standard Bootstrap UCL		459.7711
		Bootstrap-t UCL		486.1269
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL		461.5044
		Percentile Bootstrap UCL		459.2
		BCA Bootstrap UCL		471.4
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		605.9463
		97.5% Chebyshev (Mean, Sd) UCL		704.5788
		99% Chebyshev (Mean, Sd) UCL		898.3234

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Tungsten	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.942057
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.27	Data are normal at 5% significance level		
Maximum	1.3			
Mean	0.7	95% UCL (Assuming Normal Distribution)		
Median	0.755	Student's-t UCL		0.885216
Standard Deviation	0.319514			
Variance	0.102089	Gamma Distribution Test		
Coefficient of Variation	0.456448	A-D Test Statistic		0.363325
Skewness	0.410295	A-D 5% Critical Value		0.72945
Gamma Statistics		K-S Test Statistic		0.196281
k hat	4.994358	K-S 5% Critical Value		0.267432
k star (bias corrected)	3.562717	Data follow gamma distribution		
Theta hat	0.140158	at 5% significance level		
Theta star	0.196479	95% UCLs (Assuming Gamma Distribution)		
nu hat	99.88717	Approximate Gamma UCL		0.944374
nu star	71.25435	Adjusted Gamma UCL		0.996238
Approx.Chi Square Value (.05)	52.81601	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.939141
Adjusted Chi Square Value	50.06638	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-1.309333			
Maximum of log data	0.262364	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.460116	95% H-UCL		1.028372
Standard Deviation of log data	0.495298	95% Chebyshev (MVUE) UCL		1.193308
Variance of log data	0.24532	97.5% Chebyshev (MVUE) UCL		1.40498
		99% Chebyshev (MVUE) UCL		1.820768
95% Non-parametric UCLs				
		CLT UCL		0.866194
		Adj-CLT UCL (Adjusted for skewness)		0.880202
		Mod-t UCL (Adjusted for skewness)		0.887401
		Jackknife UCL		0.885216
		Standard Bootstrap UCL		0.856504
		Bootstrap-t UCL		0.896652
RECOMMENDATION		Hall's Bootstrap UCL		0.889006
Data are normal (0.05)		Percentile Bootstrap UCL		0.863
		BCA Bootstrap UCL		0.867
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		1.140419
		97.5% Chebyshev (Mean, Sd) UCL		1.330989
		99% Chebyshev (Mean, Sd) UCL		1.705326

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Uranium	T	MG/KG
Raw Statistics				
Number of Valid Samples	9	Shapiro-Wilk Test Statistic	0.912897	
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.829	
Minimum	0.62	Data are normal at 5% significance level		
Maximum	2.2			
Mean	1.318889	95% UCL (Assuming Normal Distribution)		
Median	1.3	Student's-t UCL	1.617101	
Standard Deviation	0.481104			
Variance	0.231461	Gamma Distribution Test		
Coefficient of Variation	0.36478	A-D Test Statistic	0.440913	
Skewness	0.624132	A-D 5% Critical Value	0.722083	
		K-S Test Statistic	0.248198	
		K-S 5% Critical Value	0.279492	
Gamma Statistics				
k hat	8.350738	Data follow gamma distribution		
k star (bias corrected)	5.641233	at 5% significance level		
Theta hat	0.157937			
Theta star	0.233794	95% UCLs (Assuming Gamma Distribution)		
nu hat	150.3133	Approximate Gamma UCL	1.689063	
nu star	101.5422	Adjusted Gamma UCL	1.782077	
Approx.Chi Square Value (.05)	79.28826			
Lognormal Distribution Test				
Adjusted Level of Significance	0.02308	Shapiro-Wilk Test Statistic	0.928468	
Adjusted Chi Square Value	75.14989	Shapiro-Wilk 5% Critical Value	0.829	
		Data are lognormal at 5% significance level		
Minimum of log data	-0.478036			
Maximum of log data	0.788457	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.215721	95% H-UCL	1.769897	
Standard Deviation of log data	0.377945	95% Chebyshev (MVUE) UCL	2.053604	
Variance of log data	0.142842	97.5% Chebyshev (MVUE) UCL	2.370362	
		99% Chebyshev (MVUE) UCL	2.992573	
95% Non-parametric UCLs				
		CLT UCL	1.582671	
		Adj-CLT UCL (Adjusted for skewness)	1.61832	
		Mod-t UCL (Adjusted for skewness)	1.622662	
		Jackknife UCL	1.617101	
		Standard Bootstrap UCL	1.571623	
		Bootstrap-t UCL	1.739844	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	2.106391	
		Percentile Bootstrap UCL	1.571111	
		BCA Bootstrap UCL	1.594444	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.017917	
		97.5% Chebyshev (Mean, Sd) UCL	2.320387	
		99% Chebyshev (Mean, Sd) UCL	2.914531	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Vanadium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.751513
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	7.3	Data not normal at 5% significance level		
Maximum	53.9			
Mean	19.54	95% UCL (Assuming Normal Distribution)		
Median	14.5	Student's-t UCL		28.31911
Standard Deviation	15.14472			
Variance	229.3627	Gamma Distribution Test		
Coefficient of Variation	0.775063	A-D Test Statistic		0.664338
Skewness	1.750325	A-D 5% Critical Value		0.733718
Gamma Statistics				
k hat	2.547626	K-S Test Statistic		0.253663
k star (bias corrected)	1.850005	K-S 5% Critical Value		0.269065
Theta hat	7.669886	Data follow gamma distribution		
Theta star	10.56214	at 5% significance level		
nu hat	50.95251	95% UCLs (Assuming Gamma Distribution)		
nu star	37.00009	Approximate Gamma UCL		30.03314
Approx.Chi Square Value (.05)	24.07281	Adjusted Gamma UCL		32.45663
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	22.27532	Shapiro-Wilk Test Statistic		0.907496
Log-transformed Statistics				
Minimum of log data	1.987874	Shapiro-Wilk 5% Critical Value		0.842
Maximum of log data	3.98713	Data are lognormal at 5% significance level		
Mean of log data	2.763548	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.643983	95% H-UCL		32.92668
Variance of log data	0.414714	95% Chebyshev (MVUE) UCL		36.4229
		97.5% Chebyshev (MVUE) UCL		43.93974
		99% Chebyshev (MVUE) UCL		58.70511
95% Non-parametric UCLs				
		CLT UCL		27.4175
		Adj-CLT UCL (Adjusted for skewness)		30.24994
		Mod-t UCL (Adjusted for skewness)		28.76091
		Jackknife UCL		28.31911
		Standard Bootstrap UCL		27.16542
		Bootstrap-t UCL		48.0551
		Hall's Bootstrap UCL		79.86947
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL		27.34
		BCA Bootstrap UCL		29.5
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		40.41556
		97.5% Chebyshev (Mean, Sd) UCL		49.44843
		99% Chebyshev (Mean, Sd) UCL		67.19176

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Zinc	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.934112	
Number of Unique Samples	10		Shapiro-Wilk 5% Critical Value	0.842	
Minimum	17.8		Data are normal at 5% significance level		
Maximum	55.6				
Mean	41.79	95% UCL (Assuming Normal Distribution)			
Median	42.45	Student's-t UCL		48.40257	
Standard Deviation	11.40725				
Variance	130.1254	Gamma Distribution Test			
Coefficient of Variation	0.272966	A-D Test Statistic	0.503453		
Skewness	-0.939934	A-D 5% Critical Value	0.724981		
		K-S Test Statistic	0.206555		
		K-S 5% Critical Value	0.266559		
Gamma Statistics					
k hat	11.55336	Data follow gamma distribution			
k star (bias corrected)	8.15402	at 5% significance level			
Theta hat	3.617129				
Theta star	5.125079	95% UCLs (Assuming Gamma Distribution)			
nu hat	231.0673	Approximate Gamma UCL	50.65185		
nu star	163.0804	Adjusted Gamma UCL	52.40553		
Approx.Chi Square Value (.05)	134.5485				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	130.046	Shapiro-Wilk Test Statistic	0.838341		
		Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics		Data not lognormal at 5% significance level			
Minimum of log data	2.879198				
Maximum of log data	4.018183	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	3.688756	95% H-UCL	53.08739		
Standard Deviation of log data	0.336886	95% Chebyshev (MVUE) UCL	61.79247		
Variance of log data	0.113492	97.5% Chebyshev (MVUE) UCL	70.32172		
		99% Chebyshev (MVUE) UCL	87.07576		
		95% Non-parametric UCLs			
		CLT UCL	47.72346		
		Adj-CLT UCL (Adjusted for skewness)	46.5778		
		Mod-t UCL (Adjusted for skewness)	48.22387		
		Jackknife UCL	48.40257		
		Standard Bootstrap UCL	47.45301		
		Bootstrap-t UCL	47.36048		
RECOMMENDATION		Hall's Bootstrap UCL	46.81869		
Data are normal (0.05)		Percentile Bootstrap UCL	47.13		
		BCA Bootstrap UCL	46.83		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	57.51381		
		97.5% Chebyshev (Mean, Sd) UCL	64.31752		
		99% Chebyshev (Mean, Sd) UCL	77.68209		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac\Variable:	Zirconium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.921482
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.45	Data are normal at 5% significance level		
Maximum	3.4			
Mean	2.15	95% UCL (Assuming Normal Distribution)		
Median	2.2	Student's-t UCL		2.722878
Standard Deviation	0.988264			
Variance	0.976667	Gamma Distribution Test		
Coefficient of Variation	0.459658	A-D Test Statistic		0.672354
Skewness	-0.503239	A-D 5% Critical Value		0.730826
Gamma Statistics		K-S Test Statistic		0.282144
k hat	3.485196	K-S 5% Critical Value		0.268144
k star (bias corrected)	2.506304	Data follow approximate gamma distribution		
Theta hat	0.616895	at 5% significance level		
Theta star	0.857837	95% UCLs (Assuming Gamma Distribution)		
nu hat	69.70391	Approximate Gamma UCL		3.090941
nu star	50.12607	Adjusted Gamma UCL		3.299064
Approx.Chi Square Value (.05)	34.86675	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.813517
Adjusted Chi Square Value	32.66716	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-0.798508			
Maximum of log data	1.223775	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.615198	95% H-UCL		3.94697
Standard Deviation of log data	0.658788	95% Chebyshev (MVUE) UCL		4.334511
Variance of log data	0.434002	97.5% Chebyshev (MVUE) UCL		5.240141
		99% Chebyshev (MVUE) UCL		7.019076
95% Non-parametric UCLs				
		CLT UCL		2.664044
		Adj-CLT UCL (Adjusted for skewness)		2.610903
		Mod-t UCL (Adjusted for skewness)		2.714589
		Jackknife UCL		2.722878
		Standard Bootstrap UCL		2.641126
		Bootstrap-t UCL		2.680452
RECOMMENDATION		Hall's Bootstrap UCL		2.648062
Data are normal (0.05)		Percentile Bootstrap UCL		2.64
		BCA Bootstrap UCL		2.615
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		3.512229
		97.5% Chebyshev (Mean, Sd) UCL		4.101666
		99% Chebyshev (Mean, Sd) UCL		5.259502

Table 7
Summary Statistics
Assabet River Sediments, Site

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev.	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	
VOCs (UG/KG)																
1,1,1-Trichloroethane	4 / 10	40%	0.799 : 1.09	1.4 - 8.4	1.59	2.44	1.535	2.925492	Non-Parametric	4.959341	95% Chebyshev (Mean, Std) UCL	8.4	*	8.4		
1,1-Dichloroethane	11 / 10	10%	0.799 : 1.26	0.47 - 0.47	0.499	0.0687	0.138		Poisson				1.05	0.47		
1,1-Dichloroethene	1 / 10	10%	0.799 : 1.3	2 - 2	0.652	0.48	0.736		Poisson				1.25	2		
Tetrachloroethene	7 / 10	70%	0.923 : 1	0.44 - 9.5	2.79	3.83	1.373	1.276	Non-Parametric	8.069398	95% Chebyshev (Mean, Std) UCL	9.5	*	9.5		
Trichloroethene	6 / 10	60%	0.799 : 1	2.3 - 20.7	3.68	6.11	1.660	2.916	G/NP	8.516712	Approximate Gamma UCL	20.7	*	20.7		
Metals (MG/KG)																
Aluminum	10 / 10	100%	:	3310 - 10000	6382	2205	0.346	0.473	Normal	7660.164	Student's-t UCL	10424	12801	10000	12997	
Arsenic	10 / 10	100%	:	2.5 - 22	7.43	6.01	0.809	1.795	G/NP	11.82328	Approximate Gamma UCL	22	*	22		
Barium	10 / 10	100%	:	12.6 - 45.4	26.42	9.65	0.365	0.710	Normal	32.01637	Student's-t UCL	44.1	54.5	45.4	55.4	
Beryllium	10 / 10	100%	:	0.15 - 0.42	0.259	0.08	0.309	0.754	Normal	0.305571	Student's-t UCL	0.41	0.49	0.42	0.50	
Cadmium	10 / 10	100%	:	0.054 -	0.47	0.153	0.121	0.791	G/NP	0.232071	Approximate Gamma UCL	0.47	*	0.47		
Calcium	10 / 10	100%	:	550 - 3420	1256.9	809.7	0.644	2.500	G/NP	1751.516	Approximate Gamma UCL	3420	*	3420		
Chromium	10 / 10	100%	:	13.4 - 58.5	30.93	15.61	0.505	1.029	Normal	39.97864	Student's-t UCL	59.5	76.4	58.5	77.8	
Cobalt	10 / 10	100%	:	2.2 - 12.3	5.55	2.92	0.526	1.524	Normal	7.243192	Student's-t UCL	10.9	14.1	12.3	14.3	
Copper	10 / 10	100%	:	4.7 - 22.5	12.28	5.54	0.451	0.615	Normal	15.4915	Student's-t UCL	22.4	28.4	22.5	28.9	
Iron	10 / 10	100%	:	7200 - 16300	10923	2923	0.268	0.597	Normal	12617.23	Student's-t UCL	16281	19431	16300	19692	
Lead	10 / 10	100%	:	5 - 251	41.64	74.47	1.788	3.024	Lognormal	84.56184	95% Chebyshev (MVUE) UCL			251		
Lead (log-transformed)	10 / 10	100%	:		3.009	1.069						144	455	251	501	
Magnesium	10 / 10	100%	:	1340 - 3780	2597	850.6	0.328	0.263	Normal	3090.059	Student's-t UCL	4156	5073	3780	5149	
Manganese	10 / 10	100%	:	90.8 - 400	208.3	103	0.494	0.810	Normal	267.9703	Student's-t UCL	397	508	400	517	
Mercury	10 / 10	100%	:	0.0071 -	0.66	0.113	0.194	1.717	Lognormal	0.26768	95% Chebyshev (MVUE) UCL			0.66		
Mercury (log-transformed)	10 / 10	100%	:		-2.909	1.178						0.47	1.68	0.66	1.87	
Molybdenum	10 / 10	100%	:	0.15 - 4.5	1.211	1.417	1.170	1.718	G/NP	2.463872	Approximate Gamma UCL	4.5	*	4.5		
Nickel	10 / 10	100%	:	8.3 - 20.7	13.35	4.36	0.327	0.626	Normal	15.87518	Student's-t UCL	21.3	26.0	20.7	26.4	
Potassium	10 / 10	100%	:	256 - 1290	825.2	364.2	0.441	-0.429	Normal	1036.32	Student's-t UCL	1493	1885	1290	1918	
Selenium	1 / 10	10%	0.355 :	1.3	0.95 -	0.95	0.456	0.226	Poisson				0.95	0.95		
Silver	10 / 10	100%	:	0.022 -	0.3	0.104	0.081	0.779	Normal	0.151084	Student's-t UCL	0.25	0.34	0.30	0.35	
Sodium	10 / 10	100%	:	68.6 - 151	110.2	24.73	0.224	0.100	Normal	124.5061	Student's-t UCL	156	182	151	184	
Thallium	10 / 10	100%	:	0.055 -	0.16	0.093	0.034	0.366	Normal	0.11242	Student's-t UCL	0.16	0.19	0.16	0.20	
Thorium	10 / 10	100%	:	2.2 - 6.1	3.58	1.09	0.304	1.326	Normal	4.212535	Student's-t UCL	5.58	6.76	6.10	6.85	
Titanium	10 / 10	100%	:	188 - 545	355.7	112.4	0.316	0.159	Normal	420.8522	Student's-t UCL	562	683	545	693	
Tungsten	9 / 10	90%	0.2 :	0.2	0.24 -	1.2	0.613	0.37	Normal	0.828291	Student's-t UCL	1.29	1.69	1.20	1.72	
Uranium	10 / 10	100%	:	0.66 -	2.5	1.296	0.623	0.481	Normal	1.657083	Student's-t UCL	2.44	3.11	2.50	3.17	
Vanadium	10 / 10	100%	:	10.1 -	22.5	15.02	3.9	0.260	0.729	Normal	17.28262	Student's-t UCL	22.2	26.4	22.5	26.7
Zinc	10 / 10	100%	:	14.3 -	52.7	34.34	13.15	0.383	-0.028	Normal	41.96168	Student's-t UCL	58.4	72.6	52.7	73.8
Zirconium	10 / 10	100%	:	0.87 -	2.4	1.573	0.472	0.300	0.209	Normal	1.84662	Student's-t UCL	2.44	2.95	2.40	2.99

Notes: 1. For 10 samples, the non-parametric 95th percentile is the 10th ordered sample, i.e., the same as the maximum.

2. For 10 samples, the non-parametric one-sided 95% UCL on the mean is the 8th ordered sample.

3. The Student-t value for 10-1 = 9 degrees of freedom and 95% level of confidence is 1.833, for 8 df is 1.860.

4. The factor for a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911, and for 9 samples 3.023.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

7. The mean and standard deviation are computed with NDs replaced with DL/2.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	1,1,1-Trichloroethane	T	UC
Raw Statistics				
Number of Valid Samples	10	Normal Distribution Test		
Number of Unique Samples	9	Shapiro-Wilk Test Statistic	0.526342	
Minimum	0.3995	Shapiro-Wilk 5% Critical Value	0.842	
Maximum	8.4	Data not normal at 5% significance level		
Mean	1.59	95% UCL (Assuming Normal Distribution)		
Median	0.5375	Student's-t UCL	3.006959	
Standard Deviation	2.444377			
Variance	5.974978	Gamma Distribution Test		
Coefficient of Variation	1.537344	A-D Test Statistic	1.288607	
Skewness	2.925492	A-D 5% Critical Value	0.747851	
Gamma Statistics				
k hat	1.023185	K-S Test Statistic	0.314734	
k star (bias corrected)	0.782896	K-S 5% Critical Value	0.273628	
Theta hat	1.553971	Data do not follow gamma distribution		
Theta star	2.03092	at 5% significance level		
nu hat	20.46371	95% UCLs (Assuming Gamma Distribution)		
nu star	15.65793	Approximate Gamma UCL	3.224814	
Approx.Chi Square Value (.05)	7.720169	Adjusted Gamma UCL	3.675351	
Lognormal Distribution Test				
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.786036	
Adjusted Chi Square Value	6.773804	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	-0.917542	Data not lognormal at 5% significance level		
Maximum of log data	2.128232	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.098897	95% H-UCL	3.76141	
Standard Deviation of log data	0.95847	95% Chebyshev (MVUE) UCL	3.216713	
Variance of log data	0.918664	97.5% Chebyshev (MVUE) UCL	4.02441	
		99% Chebyshev (MVUE) UCL	5.610976	
95% Non-parametric UCLs				
		CLT UCL	2.861439	
		Adj-CLT UCL (Adjusted for skewness)	3.625534	
		Mod-t UCL (Adjusted for skewness)	3.126143	
		Jackknife UCL	3.006959	
		Standard Bootstrap UCL	2.775895	
		Bootstrap-t UCL	7.353157	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	7.432911	
		Percentile Bootstrap UCL	3.05315	
		BCA Bootstrap UCL	3.85905	
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	4.959341	
		97.5% Chebyshev (Mean, Sd) UCL	6.417257	
		99% Chebyshev (Mean, Sd) UCL	9.281052	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Tetrachloroethene	T	UG/KC
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.643687	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.44	Data not normal at 5% significance level		
Maximum	9.5			
Mean	2.79055	95% UCL (Assuming Normal Distribution)		
Median	0.535	Student's-t UCL	5.010543	
Standard Deviation	3.829679			
Variance	14.66644	Gamma Distribution Test		
Coefficient of Variation	1.372374	A-D Test Statistic	1.757642	
Skewness	1.275699	A-D 5% Critical Value	0.762596	
Gamma Statistics				
k hat	0.679745	Data do not follow gamma distribution		
k star (bias corrected)	0.542488	at 5% significance level		
Theta hat	4.105291			
Theta star	5.143984	95% UCLs (Assuming Gamma Distribution)		
nu hat	13.5949	Approximate Gamma UCL	6.760208	
nu star	10.84976	Adjusted Gamma UCL	7.981567	
Approx.Chi Square Value (.05)	4.478678			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	3.793341	Shapiro-Wilk Test Statistic	0.670413	
Log-transformed Statistics				
Minimum of log data	-0.820981	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	2.251292	Data not lognormal at 5% significance level		
Mean of log data	0.133492			
Standard Deviation of log data	1.344704	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	1.808228	95% H-UCL	15.85506	
		95% Chebyshev (MVUE) UCL	7.246692	
		97.5% Chebyshev (MVUE) UCL	9.32303	
		99% Chebyshev (MVUE) UCL	13.40159	
95% Non-parametric UCLs				
		CLT UCL	4.782551	
		Adj-CLT UCL (Adjusted for skewness)	5.304576	
		Mod-t UCL (Adjusted for skewness)	5.091968	
		Jackknife UCL	5.010543	
		Standard Bootstrap UCL	4.688689	
		Bootstrap-t UCL	7.016167	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	4.689701	
		Percentile Bootstrap UCL	4.66015	
		BCA Bootstrap UCL	5.09915	
Use 99% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	8.069398	
		97.5% Chebyshev (Mean, Sd) UCL	10.35356	
		99% Chebyshev (Mean, Sd) UCL	14.84035	
Recommended UCL exceeds the maximum observation				
Consider using 95% or 97.5% Chebyshev (Mean, Sd) UCL				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Trichloroethene	T	UG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.547893	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.3995	Data not normal at 5% significance level		
Maximum	20.7			
Mean	3.6825	95% UCL (Assuming Normal Distribution)		
Median	2.4	Student's-t UCL	7.224146	
Standard Deviation	6.109645			
Variance	37.32776	Gamma Distribution Test		
Coefficient of Variation	1.659102	A-D Test Statistic	0.825771	
Skewness	2.915991	A-D 5% Critical Value	0.756969	
Gamma Statistics		K-S Test Statistic	0.246937	
k hat	0.75003	K-S 5% Critical Value	0.27598	
k star (bias corrected)	0.591688	Data follow approximate gamma distribution at 5% significance level		
Theta hat	4.909802			
Theta star	6.223721	95% UCLs (Assuming Gamma Distribution)		
nu hat	15.0006	Approximate Gamma UCL	8.516712	
nu star	11.83376	Adjusted Gamma UCL	9.962336	
Approx.Chi Square Value (.05)	5.116741	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.86969	
Adjusted Chi Square Value	4.374256	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.917542			
Maximum of log data	3.030134	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.50545	95% H-UCL	18.01039	
Standard Deviation of log data	1.275749	95% Chebyshev (MVUE) UCL	9.446254	
Variance of log data	1.627535	97.5% Chebyshev (MVUE) UCL	12.10384	
		99% Chebyshev (MVUE) UCL	17.32416	
95% Non-parametric UCLs				
		CLT UCL	6.860422	
		Adj-CLT UCL (Adjusted for skewness)	8.764052	
		Mod-t UCL (Adjusted for skewness)	7.521074	
		Jackknife UCL	7.224146	
		Standard Bootstrap UCL	6.656059	
		Bootstrap-t UCL	15.28893	
RECOMMENDATION		Hall's Bootstrap UCL	20.49489	
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	7.2363	
Use Approximate Gamma UCL		BCA Bootstrap UCL	8.19	
		95% Chebyshev (Mean, Sd) UCL	12.10406	
		97.5% Chebyshev (Mean, Sd) UCL	15.74808	
		99% Chebyshev (Mean, Sd) UCL	22.90605	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Aluminum	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.91963
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	3310	Data are normal at 5% significance level		
Maximum	10000			
Mean	6382	95% UCL (Assuming Normal Distribution)		
Median	5565	Student's-t UCL		7660.164
Standard Deviation	2204.943			
Variance	4861773	Gamma Distribution Test		
Coefficient of Variation	0.345494	A-D Test Statistic		0.383757
Skewness	0.47337	A-D 5% Critical Value		0.725601
Gamma Statistics		K-S Test Statistic		0.170503
k hat	9.383495	K-S 5% Critical Value		0.266729
k star (bias corrected)	6.635113	Data follow gamma distribution		
Theta hat	680.1304	at 5% significance level		
Theta star	961.8525	95% UCLs (Assuming Gamma Distribution)		
nu hat	187.6699	Approximate Gamma UCL		7908.745
nu star	132.7023	Adjusted Gamma UCL		8215.29
Approx.Chi Square Value (.05)	107.0847	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.942303
Adjusted Chi Square Value	103.089	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	8.104703			
Maximum of log data	9.21034	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	8.707006	95% H-UCL		8138.663
Standard Deviation of log data	0.349287	95% Chebyshev (MVUE) UCL		9487.191
Variance of log data	0.122001	97.5% Chebyshev (MVUE) UCL		10829.71
		99% Chebyshev (MVUE) UCL		13466.82
95% Non-parametric UCLs				
		CLT UCL		7528.898
		Adj-CLT UCL (Adjusted for skewness)		7640.424
		Mod-t UCL (Adjusted for skewness)		7677.56
		Jackknife UCL		7660.164
		Standard Bootstrap UCL		7464.801
		Bootstrap-t UCL		7850.386
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL		7522.784
Use Student's-t UCL		Percentile Bootstrap UCL		7477
		BCA Bootstrap UCL		7611
		95% Chebyshev (Mean, Sd) UCL		9421.304
		97.5% Chebyshev (Mean, Sd) UCL		10736.41
		99% Chebyshev (Mean, Sd) UCL		13319.69

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Arsenic	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.797615
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	2.5	Data not normal at 5% significance level		
Maximum	22			
Mean	7.43	95% UCL (Assuming Normal Distribution)		
Median	5.35	Student's-t UCL		10.91249
Standard Deviation	6.007597			
Variance	36.09122	Gamma Distribution Test		
Coefficient of Variation	0.808559	A-D Test Statistic		0.381383
Skewness	1.795171	A-D 5% Critical Value		0.734874
Gamma Statistics				
k hat	2.207598	K-S Test Statistic		0.184951
k star (bias corrected)	1.611986	K-S 5% Critical Value		0.269528
Theta hat	3.365648	Data follow gamma distribution		
Theta star	4.609223	at 5% significance level		
nu hat	44.15197	95% UCLs (Assuming Gamma Distribution)		
nu star	32.23971	Approximate Gamma UCL		11.82328
Approx.Chi Square Value (.05)	20.26012	Adjusted Gamma UCL		12.8609
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	18.62553	Shapiro-Wilk Test Statistic		0.941741
Log-transformed Statistics				
Minimum of log data	0.916291	Shapiro-Wilk 5% Critical Value		0.842
Maximum of log data	3.091042	Data are lognormal at 5% significance level		
Mean of log data	1.762258	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.712672	95% H-UCL		13.77532
Variance of log data	0.507901	95% Chebyshev (MVUE) UCL		14.67573
		97.5% Chebyshev (MVUE) UCL		17.87226
		99% Chebyshev (MVUE) UCL		24.15123
95% Non-parametric UCLs				
		CLT UCL		10.55484
		Adj-CLT UCL (Adjusted for skewness)		11.7072
		Mod-t UCL (Adjusted for skewness)		11.09224
		Jackknife UCL		10.91249
		Standard Bootstrap UCL		10.40641
		Bootstrap-t UCL		13.19036
		Hall's Bootstrap UCL		21.75538
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL		10.71
		BCA Bootstrap UCL		11.95
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		15.7109
		97.5% Chebyshev (Mean, Sd) UCL		19.29405
		99% Chebyshev (Mean, Sd) UCL		26.33246

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Barium	T	MG/KG
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.966225
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	12.6	Data are normal at 5% significance level		
Maximum	45.4			
Mean	26.42	95% UCL (Assuming Normal Distribution)		
Median	25.05	Student's-t UCL		32.01637
Standard Deviation	9.654222			
Variance	93.204	Gamma Distribution Test		
Coefficient of Variation	0.365413	A-D Test Statistic		0.124535
Skewness	0.709591	A-D 5% Critical Value		0.726419
Gamma Statistics		K-S Test Statistic		0.100075
k hat	8.451851	K-S 5% Critical Value		0.266878
k star (bias corrected)	5.982962	Data follow gamma distribution		
Theta hat	3.125943	at 5% significance level		
Theta star	4.415873	95% UCLs (Assuming Gamma Distribution)		
nu hat	169.037	Approximate Gamma UCL		33.13993
nu star	119.6592	Adjusted Gamma UCL		34.49993
Approx.Chi Square Value (.05)	95.39541	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.992756
Adjusted Chi Square Value	91.63488	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.533697			
Maximum of log data	3.815512	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.213798	95% H-UCL		34.31508
Standard Deviation of log data	0.370038	95% Chebyshev (MVUE) UCL		40.07433
Variance of log data	0.136928	97.5% Chebyshev (MVUE) UCL		45.97167
		99% Chebyshev (MVUE) UCL		57.55586
95% Non-parametric UCLs				
		CLT UCL		31.44163
		Adj-CLT UCL (Adjusted for skewness)		32.17362
		Mod-t UCL (Adjusted for skewness)		32.13055
		Jackknife UCL		32.01637
		Standard Bootstrap UCL		31.33233
		Bootstrap-t UCL		33.67861
		Hall's Bootstrap UCL		35.09864
RECOMMENDATION		Percentile Bootstrap UCL		31.33
Data are normal (0.05)		BCA Bootstrap UCL		31.58
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		39.72743
		97.5% Chebyshev (Mean, Sd) UCL		45.48556
		99% Chebyshev (Mean, Sd) UCL		56.7963

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Beryllium	T	MG/KG
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.948812	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.15	Data are normal at 5% significance level		
Maximum	0.42			
Mean	0.259	95% UCL (Assuming Normal Distribution)		
Median	0.235	Student's-t UCL	0.305571	
Standard Deviation	0.08034			
Variance	0.006454			
Coefficient of Variation	0.310191	Gamma Distribution Test		
Skewness	0.753515	A-D Test Statistic	0.214802	
Gamma Statistics		A-D 5% Critical Value	0.724955	
k hat	12.0618	K-S Test Statistic	0.165343	
k star (bias corrected)	8.509923	K-S 5% Critical Value	0.266535	
Theta hat	0.021473	Data follow gamma distribution		
Theta star	0.030435	at 5% significance level		
nu hat	241.2359	95% UCLs (Assuming Gamma Distribution)		
nu star	170.1985	Approximate Gamma UCL	0.312581	
Approx.Chi Square Value (.05)	141.0242	Adjusted Gamma UCL	0.323154	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	136.41	Shapiro-Wilk Test Statistic	0.981663	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	-1.89712	Data are lognormal at 5% significance level		
Maximum of log data	-0.867501	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-1.392953	95% H-UCL	0.318194	
Standard Deviation of log data	0.304833	95% Chebyshev (MVUE) UCL	0.368479	
Variance of log data	0.092923	97.5% Chebyshev (MVUE) UCL	0.415892	
		99% Chebyshev (MVUE) UCL	0.509026	
95% Non-parametric UCLs				
		CLT UCL	0.300788	
		Adj-CLT UCL (Adjusted for skewness)	0.307257	
		Mod-t UCL (Adjusted for skewness)	0.30658	
		Jackknife UCL	0.305571	
		Standard Bootstrap UCL	0.299216	
		Bootstrap-t UCL	0.317511	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	0.31368	
Use Student's-t UCL		Percentile Bootstrap UCL	0.301	
		BCA Bootstrap UCL	0.304	
		95% Chebyshev (Mean, Sd) UCL	0.36974	
		97.5% Chebyshev (Mean, Sd) UCL	0.417658	
		99% Chebyshev (Mean, Sd) UCL	0.511783	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Cadmium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.71252
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.054	Data not normal at 5% significance level		
Maximum	0.47			
Mean	0.1533	95% UCL (Assuming Normal Distribution)		
Median	0.11	Student's-t UCL		0.223703
Standard Deviation	0.121451			
Variance	0.01475			
Coefficient of Variation	0.792241			
Skewness	2.329359			
Gamma Statistics				
k hat	2.722911	Data follow approximate gamma distribution		
k star (bias corrected)	1.972704	at 5% significance level		
Theta hat	0.0563			
Theta star	0.077711	95% UCLs (Assuming Gamma Distribution)		
nu hat	54.45822	Approximate Gamma UCL		0.232071
nu star	39.45409	Adjusted Gamma UCL		0.250086
Approx.Chi Square Value (.05)	26.06236			
Adjusted Level of Significance	0.0267			
Adjusted Chi Square Value	24.18492			
Lognormal Distribution Test				
Minimum of log data	-2.918771	Shapiro-Wilk Test Statistic		0.925553
Maximum of log data	-0.755023	Shapiro-Wilk 5% Critical Value		0.842
Mean of log data	-2.070082	Data are lognormal at 5% significance level		
Standard Deviation of log data	0.610404			
Variance of log data	0.372593			
Log-transformed Statistics				
Minimum of log data	-2.918771			
Maximum of log data	-0.755023	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.070082	95% H-UCL		0.246929
Standard Deviation of log data	0.610404	95% Chebyshev (MVUE) UCL		0.277205
Variance of log data	0.372593	97.5% Chebyshev (MVUE) UCL		0.332749
		99% Chebyshev (MVUE) UCL		0.441855
95% Non-parametric UCLs				
		CLT UCL		0.216472
		Adj-CLT UCL (Adjusted for skewness)		0.246701
		Mod-t UCL (Adjusted for skewness)		0.228418
		Jackknife UCL		0.223703
		Standard Bootstrap UCL		0.213453
		Bootstrap-t UCL		0.338359
RECOMMENDATION				
Assuming gamma distribution (0.05)		Hall's Bootstrap UCL		0.466807
Use Approximate Gamma UCL		Percentile Bootstrap UCL		0.2213
		BCA Bootstrap UCL		0.2569
		95% Chebyshev (Mean, Sd) UCL		0.320708
		97.5% Chebyshev (Mean, Sd) UCL		0.393146
		99% Chebyshev (Mean, Sd) UCL		0.535435

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Calcium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.694683	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	550	Data not normal at 5% significance level		
Maximum	3420			
Mean	1256.9	95% UCL (Assuming Normal Distribution)		
Median	1042.5	Student's-t UCL	1726.287	
Standard Deviation	809.7334			
Variance	655668.1	Gamma Distribution Test		
Coefficient of Variation	0.644231	A-D Test Statistic	0.698861	
Skewness	2.499575	A-D 5% Critical Value	0.729397	
		K-S Test Statistic	0.21383	
Gamma Statistics		K-S 5% Critical Value	0.267773	
k hat	4.120456	Data follow gamma distribution		
k star (bias corrected)	2.950986	at 5% significance level		
Theta hat	305.039			
Theta star	425.9254	95% UCLs (Assuming Gamma Distribution)		
nu hat	82.40913	Approximate Gamma UCL	1751.516	
nu star	59.01972	Adjusted Gamma UCL	1858.727	
Approx.Chi Square Value (.05)	42.35296			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	39.91006	Shapiro-Wilk Test Statistic	0.901566	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	6.309918			
Maximum of log data	8.137396	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.010178	95% H-UCL	1785.804	
Standard Deviation of log data	0.487982	95% Chebyshev (MVUE) UCL	2074.748	
Variance of log data	0.238127	97.5% Chebyshev (MVUE) UCL	2439.448	
		99% Chebyshev (MVUE) UCL	3155.832	
95% Non-parametric UCLs				
		CLT UCL	1678.081	
		Adj-CLT UCL (Adjusted for skewness)	1894.348	
		Mod-t UCL (Adjusted for skewness)	1760.02	
		Jackknife UCL	1726.287	
		Standard Bootstrap UCL	1651.462	
		Bootstrap-t UCL	2393.259	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	3561.879	
Use Approximate Gamma UCL		Percentile Bootstrap UCL	1740.9	
		BCA Bootstrap UCL	1997.4	
		95% Chebyshev (Mean, Sd) UCL	2373.04	
		97.5% Chebyshev (Mean, Sd) UCL	2855.995	
		99% Chebyshev (Mean, Sd) UCL	3804.667	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Chromium	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.86538
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	13.4	Data are normal at 5% significance level		
Maximum	58.5			
Mean	30.93	95% UCL (Assuming Normal Distribution)		
Median	25.95	Student's-t UCL		39.97864
Standard Deviation	15.60969			
Variance	243.6623	Gamma Distribution Test		
Coefficient of Variation	0.504678	A-D Test Statistic		0.349308
Skewness	1.029468	A-D 5% Critical Value		0.729439
Gamma Statistics				
k hat	4.816632	K-S Test Statistic		0.185395
k star (bias corrected)	3.438309	K-S 5% Critical Value		0.267502
Theta hat	6.4215	Data follow gamma distribution		
Theta star	8.995701	at 5% significance level		
nu hat	96.33264	95% UCLs (Assuming Gamma Distribution)		
nu star	68.76618	Approximate Gamma UCL		41.97221
Approx.Chi Square Value (.05)	50.6749	Adjusted Gamma UCL		44.32469
Lognormal Distribution Test				
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.94993
Adjusted Chi Square Value	47.9854	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	2.595255	Data are lognormal at 5% significance level		
Maximum of log data	4.069027	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.324343	95% H-UCL		44.56574
Standard Deviation of log data	0.484641	95% Chebyshev (MVUE) UCL		51.80348
Variance of log data	0.234877	97.5% Chebyshev (MVUE) UCL		60.87131
		99% Chebyshev (MVUE) UCL		78.68332
95% Non-parametric UCLs				
		CLT UCL		39.04935
		Adj-CLT UCL (Adjusted for skewness)		40.76642
		Mod-t UCL (Adjusted for skewness)		40.24647
		Jackknife UCL		39.97864
		Standard Bootstrap UCL		38.52518
		Bootstrap-t UCL		46.91621
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL		57.88059
Use Student's-t UCL		Percentile Bootstrap UCL		39.49
		BCA Bootstrap UCL		40.54
		95% Chebyshev (Mean, Sd) UCL		52.44647
		97.5% Chebyshev (Mean, Sd) UCL		61.75666
		99% Chebyshev (Mean, Sd) UCL		80.04473

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Cobalt	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.861436
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842
Minimum	2.2	Data are normal at 5% significance level		
Maximum	12.3			
Mean	5.55	95% UCL (Assuming Normal Distribution)		
Median	4.75	Student's-t UCL		7.243192
Standard Deviation	2.920902			
Variance	8.531667	Gamma Distribution Test		
Coefficient of Variation	0.526289	A-D Test Statistic		0.32886
Skewness	1.524268	A-D 5% Critical Value		0.729434
Gamma Statistics		K-S Test Statistic		0.18684
k hat	4.730658	K-S 5% Critical Value		0.267535
k star (bias corrected)	3.378127	Data follow gamma distribution		
Theta hat	1.173198	at 5% significance level		
Theta star	1.642922	95% UCLs (Assuming Gamma Distribution)		
nu hat	94.61315	Approximate Gamma UCL		7.553613
nu star	67.56254	Adjusted Gamma UCL		7.981289
Approx.Chi Square Value (.05)	49.64142			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	46.98139	Shapiro-Wilk Test Statistic		0.970352
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0.788457			
Maximum of log data	2.509599	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	1.604397	95% H-UCL		7.997278
Standard Deviation of log data	0.486085	95% Chebyshev (MVUE) UCL		9.294014
Variance of log data	0.236279	97.5% Chebyshev (MVUE) UCL		10.92383
		99% Chebyshev (MVUE) UCL		14.1253
95% Non-parametric UCLs				
		CLT UCL		7.069302
		Adj-CLT UCL (Adjusted for skewness)		7.54503
		Mod-t UCL (Adjusted for skewness)		7.317396
		Jackknife UCL		7.243192
		Standard Bootstrap UCL		6.967356
		Bootstrap-t UCL		8.758087
RECOMMENDATION		Hall's Bootstrap UCL		16.78548
Data are normal (0.05)		Percentile Bootstrap UCL		7.1
		BCA Bootstrap UCL		7.45
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		9.576185
		97.5% Chebyshev (Mean, Sd) UCL		11.31832
		99% Chebyshev (Mean, Sd) UCL		14.7404

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Copper	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic			0.946037
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value			0.842
Minimum	4.7	Data are normal at 5% significance level			
Maximum	22.5				
Mean	12.28	95% UCL (Assuming Normal Distribution)			
Median	10.75	Student's-t UCL			15.4915
Standard Deviation	5.540116				
Variance	30.69289	Gamma Distribution Test			
Coefficient of Variation	0.45115	A-D Test Statistic			0.212083
Skewness	0.614666	A-D 5% Critical Value			0.729132
Gamma Statistics		K-S Test Statistic			0.147702
k hat	5.362262	K-S 5% Critical Value			0.267372
k star (bias corrected)	3.82025	Data follow gamma distribution at 5% significance level			
Theta hat	2.290078				
Theta star	3.214449	95% UCLs (Assuming Gamma Distribution)			
nu hat	107.2452	Approximate Gamma UCL			16.38382
nu star	76.40501	Adjusted Gamma UCL			17.24851
Approx.Chi Square Value (.05)	57.26708				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	54.39621	Shapiro-Wilk Test Statistic			0.972312
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value			0.842
Minimum of log data	1.547563	Data are lognormal at 5% significance level			
Maximum of log data	3.113515				
Mean of log data	2.411839	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.473408	95% H-UCL			17.60933
Variance of log data	0.224115	95% Chebyshev (MVUE) UCL			20.50174
		97.5% Chebyshev (MVUE) UCL			24.03899
		99% Chebyshev (MVUE) UCL			30.98724
95% Non-parametric UCLs					
		CLT UCL			15.16168
		Adj-CLT UCL (Adjusted for skewness)			15.52555
		Mod-t UCL (Adjusted for skewness)			15.54826
		Jackknife UCL			15.4915
		Standard Bootstrap UCL			15.10161
		Bootstrap-t UCL			16.17975
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL			15.82216
		Percentile Bootstrap UCL			14.98
		BCA Bootstrap UCL			15.32
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			19.91652
		97.5% Chebyshev (Mean, Sd) UCL			23.22085
		99% Chebyshev (Mean, Sd) UCL			29.71157

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Iron	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.95612
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	7200	Data are normal at 5% significance level		
Maximum	16300			
Mean	10923	95% UCL (Assuming Normal Distribution)		
Median	10335	Student's-t UCL		12617.23
Standard Deviation	2922.697			
Variance	8542157	Gamma Distribution Test		
Coefficient of Variation	0.267573	A-D Test Statistic		0.173512
Skewness	0.596623	A-D 5% Critical Value		0.724752
		K-S Test Statistic		0.138487
Gamma Statistics				
k hat	16.03383	K-S 5% Critical Value		0.266352
k star (bias corrected)	11.29035	Data follow gamma distribution		
Theta hat	681.2472	at 5% significance level		
Theta star	967.4638	95% UCLs (Assuming Gamma Distribution)		
nu hat	320.6765	Approximate Gamma UCL		12845.07
nu star	225.8069	Adjusted Gamma UCL		13217.96
Approx.Chi Square Value (.05)	192.0184			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	186.6013	Shapiro-Wilk Test Statistic		0.976754
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	8.881836	Data are lognormal at 5% significance level		
Maximum of log data	9.69892	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	9.267118	95% H-UCL		12997.33
Standard Deviation of log data	0.26377	95% Chebyshev (MVUE) UCL		14911.89
Variance of log data	0.069575	97.5% Chebyshev (MVUE) UCL		16639.25
		99% Chebyshev (MVUE) UCL		20032.31
		95% Non-parametric UCLs		
		CLT UCL		12443.24
		Adj-CLT UCL (Adjusted for skewness)		12629.56
		Mod-t UCL (Adjusted for skewness)		12646.29
		Jackknife UCL		12617.23
		Standard Bootstrap UCL		12352.28
		Bootstrap-t UCL		12835.29
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL		12810.47
		Percentile Bootstrap UCL		12437
		BCA Bootstrap UCL		12450
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		14951.66
		97.5% Chebyshev (Mean, Sd) UCL		16694.86
		99% Chebyshev (Mean, Sd) UCL		20119.05

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Lead	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.495781
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	5	Data not normal at 5% significance level		
Maximum	251			
Mean	41.64	95% UCL (Assuming Normal Distribution)		
Median	14	Student's-t UCL		84.81109
Standard Deviation	74.47385			
Variance	5546.354	Gamma Distribution Test		
Coefficient of Variation	1.788517	A-D Test Statistic		1.269102
Skewness	3.024325	A-D 5% Critical Value		0.754474
Gamma Statistics				
k hat	0.821732	K-S Test Statistic		0.292383
k star (bias corrected)	0.641879	K-S 5% Critical Value		0.27534
Theta hat	50.67347	Data do not follow gamma distribution		
Theta star	64.87205	at 5% significance level		
nu hat	16.43463	95% UCLs (Assuming Gamma Distribution)		
nu star	12.83758	Approximate Gamma UCL		92.44231
Approx.Chi Square Value (.05)	5.782598	Adjusted Gamma UCL		107.2549
Lognormal Distribution Test				
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.85698
Adjusted Chi Square Value	4.983982	Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	1.609438	Data are lognormal at 5% significance level		
Maximum of log data	5.525453			
Mean of log data	3.009345	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.068869	95% H-UCL		114.0983
Variance of log data	1.142482	95% Chebyshev (MVUE) UCL		84.56184
		97.5% Chebyshev (MVUE) UCL		106.7987
		99% Chebyshev (MVUE) UCL		150.4788
95% Non-parametric UCLs				
		CLT UCL		80.37745
		Adj-CLT UCL (Adjusted for skewness)		104.4439
		Mod-t UCL (Adjusted for skewness)		88.56497
		Jackknife UCL		84.81109
		Standard Bootstrap UCL		77.34752
		Bootstrap-t UCL		301.3891
RECOMMENDATION				
Data are lognormal (0.05)		Hall's Bootstrap UCL		229.3734
Use 95% Chebyshev (MVUE) UCL		Percentile Bootstrap UCL		87.21
		BCA Bootstrap UCL		111.11
		95% Chebyshev (Mean, Sd) UCL		144.2951
		97.5% Chebyshev (Mean, Sd) UCL		188.7141
		99% Chebyshev (Mean, Sd) UCL		275.9665

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Magnesium	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.904731	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	1340	Data are normal at 5% significance level			
Maximum	3780				
Mean	2597	95% UCL (Assuming Normal Distribution)			
Median	2445	Student's-t UCL		3090.059	
Standard Deviation	850.5691				
Variance	723467.8	Gamma Distribution Test			
Coefficient of Variation	0.32752	A-D Test Statistic		0.407861	
Skewness	0.262938	A-D 5% Critical Value		0.72506	
Gamma Statistics					
k hat	10.00742	K-S Test Statistic		0.190621	
k star (bias corrected)	7.07186	K-S 5% Critical Value		0.26663	
Theta hat	259.5075	Data follow gamma distribution			
Theta star	367.2301	at 5% significance level			
nu hat	200.1484	95% UCLs (Assuming Gamma Distribution)			
nu star	141.4372	Approximate Gamma UCL		3195.406	
Approx. Chi Square Value (.05)	114.9502	Adjusted Gamma UCL		3314.996	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	110.8033	Shapiro-Wilk Test Statistic		0.925328	
Log-transformed Statistics					
Minimum of log data	7.200425	Shapiro-Wilk 5% Critical Value		0.842	
Maximum of log data	8.237479	Data are lognormal at 5% significance level			
Mean of log data	7.811318	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.341934	95% H-UCL		3295.269	
Variance of log data	0.116919	95% Chebyshev (MVUE) UCL		3838.05	
		97.5% Chebyshev (MVUE) UCL		4373.288	
		99% Chebyshev (MVUE) UCL		5424.658	
RECOMMENDATION					
Data are normal (0.05)		95% Non-parametric UCLs			
Use Student's-t UCL		CLT UCL		3039.422	
		Adj-CLT UCL (Adjusted for skewness)		3063.319	
		Mod-t UCL (Adjusted for skewness)		3093.786	
		Jackknife UCL		3090.059	
		Standard Bootstrap UCL		3026.922	
		Bootstrap-t UCL		3115.653	
		Hall's Bootstrap UCL		3041.677	
		Percentile Bootstrap UCL		3008	
		BCA Bootstrap UCL		3007	
		95% Chebyshev (Mean, Sd) UCL		3769.429	
		97.5% Chebyshev (Mean, Sd) UCL		4276.739	
		99% Chebyshev (Mean, Sd) UCL		5273.253	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Manganese	T	MG/KG
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.912811
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	90.8	Data are normal at 5% significance level		
Maximum	400			
Mean	208.28	95% UCL (Assuming Normal Distribution)		
Median	192.5	Student's-t UCL		267.9703
Standard Deviation	102.9709			
Variance	10603.01	Gamma Distribution Test		
Coefficient of Variation	0.494387	A-D Test Statistic		0.264999
Skewness	0.810133	A-D 5% Critical Value		0.729437
Gamma Statistics		K-S Test Statistic		0.173887
k hat	4.78211	K-S 5% Critical Value		0.267515
k star (bias corrected)	3.414144	Data follow gamma distribution		
Theta hat	43.55399	at 5% significance level		
Theta star	61.00504	95% UCLs (Assuming Gamma Distribution)		
nu hat	95.64221	Approximate Gamma UCL		282.9692
nu star	68.28288	Adjusted Gamma UCL		298.8934
Approx.Chi Square Value (.05)	50.25975			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	47.58205	Shapiro-Wilk Test Statistic		0.962275
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.842
Minimum of log data	4.508659	Data are lognormal at 5% significance level		
Maximum of log data	5.991465			
Mean of log data	5.230699	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.49127	95% H-UCL		302.7523
Variance of log data	0.241346	95% Chebyshev (MVUE) UCL		351.5498
		97.5% Chebyshev (MVUE) UCL		413.5993
		99% Chebyshev (MVUE) UCL		535.4836
95% Non-parametric UCLs				
		CLT UCL		261.8401
		Adj-CLT UCL (Adjusted for skewness)		270.7537
		Mod-t UCL (Adjusted for skewness)		269.3606
		Jackknife UCL		267.9703
		Standard Bootstrap UCL		259.8467
		Bootstrap-t UCL		289.274
RECOMMENDATION		Hall's Bootstrap UCL		279.3303
Data are normal (0.05)		Percentile Bootstrap UCL		260.88
Use Student's-t UCL		BCA Bootstrap UCL		266.3
		95% Chebyshev (Mean, Sd) UCL		350.2156
		97.5% Chebyshev (Mean, Sd) UCL		411.6312
		99% Chebyshev (Mean, Sd) UCL		532.2704

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Mercury	T	MG/KG
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic			0.515479
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value			0.842
Minimum	0.0071	Data not normal at 5% significance level			
Maximum	0.66				
Mean	0.11341	95% UCL (Assuming Normal Distribution)			
Median	0.052	Student's-t UCL			0.226155
Standard Deviation	0.194496				
Variance	0.037829	Gamma Distribution Test			
Coefficient of Variation	1.714978	A-D Test Statistic			0.855486
Skewness	3.01624	A-D 5% Critical Value			0.754898
		K-S Test Statistic			0.294623
		K-S 5% Critical Value			0.275449
Gamma Statistics		Data do not follow gamma distribution			
k hat	0.809546	at 5% significance level			
k star (bias corrected)	0.633349				
Theta hat	0.140091	95% UCLs (Assuming Gamma Distribution)			
Theta star	0.179064	Approximate Gamma UCL			0.253431
nu hat	16.19091	Adjusted Gamma UCL			0.294424
nu star	12.66697				
Approx.Chi Square Value (.05)	5.668447	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic			0.936008
Adjusted Chi Square Value	4.879226	Shapiro-Wilk 5% Critical Value			0.842
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	-4.94766				
Maximum of log data	-0.415515	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-2.908722	95% H-UCL			0.427768
Standard Deviation of log data	1.177791	95% Chebyshev (MVUE) UCL			0.26768
Variance of log data	1.387192	97.5% Chebyshev (MVUE) UCL			0.340812
		99% Chebyshev (MVUE) UCL			0.484466
95% Non-parametric UCLs					
		CLT UCL			0.214577
		Adj-CLT UCL (Adjusted for skewness)			0.277261
		Mod-t UCL (Adjusted for skewness)			0.235933
		Jackknife UCL			0.226155
		Standard Bootstrap UCL			0.206843
		Bootstrap-t UCL			0.624482
RECOMMENDATION		Hall's Bootstrap UCL			0.648427
Data are lognormal (0.05)		Percentile Bootstrap UCL			0.233
Use 95% Chebyshev (MVUE) UCL		BCA Bootstrap UCL			0.29561
		95% Chebyshev (Mean, Sd) UCL			0.381504
		97.5% Chebyshev (Mean, Sd) UCL			0.497508
		99% Chebyshev (Mean, Sd) UCL			0.725376

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Molybdenum	T	MG/KG
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.756145	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	0.15	Data not normal at 5% significance level			
Maximum	4.5				
Mean	1.211	95% UCL (Assuming Normal Distribution)			
Median	0.58	Student's-t UCL		2.032369	
Standard Deviation	1.416933				
Variance	2.007699	Gamma Distribution Test			
Coefficient of Variation	1.170052	A-D Test Statistic		0.487996	
Skewness	1.71808	A-D 5% Critical Value		0.748	
Gamma Statistics		K-S Test Statistic		0.258834	
k hat	1.014939	K-S 5% Critical Value		0.273671	
k star (bias corrected)	0.777124	Data follow gamma distribution			
Theta hat	1.193175	at 5% significance level			
Theta star	1.558309	95% UCLs (Assuming Gamma Distribution)			
nu hat	20.29879	Approximate Gamma UCL		2.463872	
nu star	15.54248	Adjusted Gamma UCL		2.809832	
Approx.Chi Square Value (.05)	7.639175	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.948493	
Adjusted Chi Square Value	6.698602	Shapiro-Wilk 5% Critical Value		0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	-1.89712				
Maximum of log data	1.504077	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-0.376289	95% H-UCL		4.506354	
Standard Deviation of log data	1.120758	95% Chebyshev (MVUE) UCL		3.092092	
Variance of log data	1.256098	97.5% Chebyshev (MVUE) UCL		3.920813	
		99% Chebyshev (MVUE) UCL		5.548675	
95% Non-parametric UCLs					
		CLT UCL		1.948015	
		Adj-CLT UCL (Adjusted for skewness)		2.208135	
		Mod-t UCL (Adjusted for skewness)		2.072943	
		Jackknife UCL		2.032369	
		Standard Bootstrap UCL		1.918525	
		Bootstrap-t UCL		2.934154	
		Hall's Bootstrap UCL		2.484745	
RECOMMENDATION		Percentile Bootstrap UCL		1.952	
Data follow gamma distribution (0.05)		BCA Bootstrap UCL		2.143	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		3.164107	
		97.5% Chebyshev (Mean, Sd) UCL		4.009218	
		99% Chebyshev (Mean, Sd) UCL		5.669275	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Nickel	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.915354	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	8.3	Data are normal at 5% significance level			
Maximum	20.7				
Mean	13.35	95% UCL (Assuming Normal Distribution)			
Median	12.15	Student's-t UCL		15.87518	
Standard Deviation	4.356158				
Variance	18.97611				
Coefficient of Variation	0.326304	Gamma Distribution Test			
Skewness	0.625613	A-D Test Statistic	0.316202		
Gamma Statistics					
k hat	10.93574	A-D 5% Critical Value		0.725012	
k star (bias corrected)	7.721681	K-S Test Statistic		0.187813	
Theta hat	1.220768	K-S 5% Critical Value		0.266587	
Theta star	1.728898	Data follow gamma distribution			
nu hat	218.7147	at 5% significance level			
nu star	154.4336	95% UCLs (Assuming Gamma Distribution)			
Approx.Chi Square Value (.05)	126.7013	Approximate Gamma UCL		16.27204	
Adjusted Level of Significance	0.0267	Adjusted Gamma UCL		16.85242	
Lognormal Distribution Test					
Adjusted Chi Square Value	122.3379	Shapiro-Wilk Test Statistic	0.944388		
		Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics					
Minimum of log data	2.116256	Data are lognormal at 5% significance level			
Maximum of log data	3.030134	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	2.545098	95% H-UCL	16.5809		
Standard Deviation of log data	0.318927	95% Chebyshev (MVUE) UCL	19.24897		
Variance of log data	0.101714	97.5% Chebyshev (MVUE) UCL	21.80628		
		99% Chebyshev (MVUE) UCL	26.82962		
95% Non-parametric UCLs					
		CLT UCL	15.61585		
		Adj-CLT UCL (Adjusted for skewness)	15.90705		
		Mod-t UCL (Adjusted for skewness)	15.9206		
		Jackknife UCL	15.87518		
		Standard Bootstrap UCL	15.4897		
		Bootstrap-t UCL	16.63006		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	15.9121		
		Percentile Bootstrap UCL	15.56		
		BCA Bootstrap UCL	15.72		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	19.35455		
		97.5% Chebyshev (Mean, Sd) UCL	21.95272		
		99% Chebyshev (Mean, Sd) UCL	27.05633		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Potassium	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic			0.90339
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value			0.842
Minimum	256	Data are normal at 5% significance level			
Maximum	1290				
Mean	825.2	95% UCL (Assuming Normal Distribution)			
Median	976.5	Student's-t UCL			1036.32
Standard Deviation	364.1995				
Variance	132641.3	Gamma Distribution Test			
Coefficient of Variation	0.441347	A-D Test Statistic			0.625149
Skewness	-0.428722	A-D 5% Critical Value			0.729414
		K-S Test Statistic			0.279822
		K-S 5% Critical Value			0.267665
Gamma Statistics					
k hat	4.397997	Data follow approximate gamma distribution			
k star (bias corrected)	3.145265	at 5% significance level			
Theta hat	187.6309				
Theta star	262.3626	95% UCLs (Assuming Gamma Distribution)			
nu hat	87.95995	Approximate Gamma UCL			1136.934
nu star	62.9053	Adjusted Gamma UCL			1204.006
Approx.Chi Square Value (.05)	45.6574				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	43.11393	Shapiro-Wilk Test Statistic			0.863752
		Shapiro-Wilk 5% Critical Value			0.842
Log-transformed Statistics					
Minimum of log data	5.545177	Data are lognormal at 5% significance level			
Maximum of log data	7.162397				
Mean of log data	6.597651	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.553631	95% H-UCL			1306.163
Variance of log data	0.306507	95% Chebyshev (MVUE) UCL			1495.431
		97.5% Chebyshev (MVUE) UCL			1778.857
		99% Chebyshev (MVUE) UCL			2335.592
95% Non-parametric UCLs					
		CLT UCL			1014.638
		Adj-CLT UCL (Adjusted for skewness)			997.954
		Mod-t UCL (Adjusted for skewness)			1033.717
		Jackknife UCL			1036.32
		Standard Bootstrap UCL			1005.847
		Bootstrap-t UCL			1019.939
		Hall's Bootstrap UCL			979.5675
RECOMMENDATION					
Data are normal (0.05)		Percentile Bootstrap UCL			1008.2
		BCA Bootstrap UCL			994.8
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			1327.214
		97.5% Chebyshev (Mean, Sd) UCL			1544.436
		99% Chebyshev (Mean, Sd) UCL			1971.127

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Silver	T	MG/KG
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.847295
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.022	Data are normal at 5% significance level		
Maximum	0.3			
Mean	0.1043	95% UCL (Assuming Normal Distribution)		
Median	0.0885	Student's-t UCL		0.151084
Standard Deviation	0.080707			
Variance	0.006514	Gamma Distribution Test		
Coefficient of Variation	0.773794	A-D Test Statistic		0.170098
Skewness	1.703186	A-D 5% Critical Value		0.735106
		K-S Test Statistic		0.115179
		K-S 5% Critical Value		0.269621
Gamma Statistics				
k hat	2.139284	Data follow gamma distribution		
k star (bias corrected)	1.564165	at 5% significance level		
Theta hat	0.048755			
Theta star	0.066681	95% UCLs (Assuming Gamma Distribution)		
nu hat	42.78568	Approximate Gamma UCL		0.167304
nu star	31.28331	Adjusted Gamma UCL		0.182262
Approx.Chi Square Value (.05)	19.50249			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	17.90202	Shapiro-Wilk Test Statistic		0.989241
		Shapiro-Wilk 5% Critical Value		0.842
		Data are lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	-3.816713			
Maximum of log data	-1.203973	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.512052	95% H-UCL		0.212621
Standard Deviation of log data	0.763308	95% Chebyshev (MVUE) UCL		0.218913
Variance of log data	0.582639	97.5% Chebyshev (MVUE) UCL		0.268295
		99% Chebyshev (MVUE) UCL		0.365295
		95% Non-parametric UCLs		
		CLT UCL		0.146279
		Adj-CLT UCL (Adjusted for skewness)		0.160967
		Mod-t UCL (Adjusted for skewness)		0.153375
		Jackknife UCL		0.151084
		Standard Bootstrap UCL		0.143041
		Bootstrap-t UCL		0.17695
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL		0.338224
		Percentile Bootstrap UCL		0.1464
		BCA Bootstrap UCL		0.1614
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		0.215546
		97.5% Chebyshev (Mean, Sd) UCL		0.263683
		99% Chebyshev (Mean, Sd) UCL		0.358238

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Sodium	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.980318	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	68.6	Data are normal at 5% significance level			
Maximum	151				
Mean	110.17	95% UCL (Assuming Normal Distribution)			
Median	106	Student's-t UCL		124.5061	
Standard Deviation	24.73109				
Variance	611.6268	Gamma Distribution Test			
Coefficient of Variation	0.224481	A-D Test Statistic	0.178214		
Skewness	0.099709	A-D 5% Critical Value	0.724543		
Gamma Statistics					
k hat	21.30169	K-S Test Statistic		0.124568	
k star (bias corrected)	14.97785	K-S 5% Critical Value		0.266157	
Theta hat	5.171889	Data follow gamma distribution			
Theta star	7.355528	at 5% significance level			
nu hat	426.0339	95% UCLs (Assuming Gamma Distribution)			
nu star	299.557	Approximate Gamma UCL		126.7088	
Approx.Chi Square Value (.05)	260.457	Adjusted Gamma UCL		129.871	
Adjusted Level of Significance	0.0267				
Adjusted Chi Square Value	254.1152	Lognormal Distribution Test			
Log-transformed Statistics					
Minimum of log data	4.228293	Shapiro-Wilk Test Statistic		0.97194	
Maximum of log data	5.01728	Shapiro-Wilk 5% Critical Value		0.842	
Mean of log data	4.678369	Data are lognormal at 5% significance level			
Standard Deviation of log data	0.232546	95% UCLs (Assuming Lognormal Distribution)			
Variance of log data	0.054078	95% H-UCL	128.1871		
		95% Chebyshev (MVUE) UCL	145.7271		
		97.5% Chebyshev (MVUE) UCL	161.0828		
		99% Chebyshev (MVUE) UCL	191.2462		
95% Non-parametric UCLs					
		CLT UCL	123.0338		
		Adj-CLT UCL (Adjusted for skewness)	123.2973		
		Mod-t UCL (Adjusted for skewness)	124.5472		
		Jackknife UCL	124.5061		
		Standard Bootstrap UCL	122.6034		
		Bootstrap-t UCL	125.5482		
RECOMMENDATION					
Data are normal (0.05)			Hall's Bootstrap UCL	123.6478	
			Percentile Bootstrap UCL	122.51	
			BCA Bootstrap UCL	122.44	
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	144.2595	
			97.5% Chebyshev (Mean, Sd) UCL	159.01	
			99% Chebyshev (Mean, Sd) UCL	187.9846	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Thallium T	MG/KG
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.915511
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.055	Data are normal at 5% significance level	
Maximum	0.16		
Mean	0.0928	95% UCL (Assuming Normal Distribution)	
Median	0.0825	Student's-t UCL	0.11242
Standard Deviation	0.033845		
Variance	0.001146	Gamma Distribution Test	
Coefficient of Variation	0.364713	A-D Test Statistic	0.317918
Skewness	0.780895	A-D 5% Critical Value	0.726091
Gamma Statistics		K-S Test Statistic	0.150838
k hat	8.82589	K-S 5% Critical Value	0.266818
k star (bias corrected)	6.24479	Data follow gamma distribution	
Theta hat	0.010515	at 5% significance level	
Theta star	0.01486	95% UCLs (Assuming Gamma Distribution)	
nu hat	176.5178	Approximate Gamma UCL	0.115811
nu star	124.8958	Adjusted Gamma UCL	0.120452
Approx.Chi Square Value (.05)	100.08		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	96.22356	Shapiro-Wilk Test Statistic	0.943616
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	-2.900422	Data are lognormal at 5% significance level	
Maximum of log data	-1.832581		
Mean of log data	-2.435029	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.356248	95% H-UCL	0.11889
Variance of log data	0.126913	95% Chebyshev (MVUE) UCL	0.138687
		97.5% Chebyshev (MVUE) UCL	0.158578
		99% Chebyshev (MVUE) UCL	0.197651
		95% Non-parametric UCLs	
		CLT UCL	0.110405
		Adj-CLT UCL (Adjusted for skewness)	0.113229
		Mod-t UCL (Adjusted for skewness)	0.11286
		Jackknife UCL	0.11242
		Standard Bootstrap UCL	0.10955
		Bootstrap-t UCL	0.115496
		Hall's Bootstrap UCL	0.114326
RECOMMENDATION		Percentile Bootstrap UCL	0.1109
Data are normal (0.05)		BCA Bootstrap UCL	0.1107
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.139453
		97.5% Chebyshev (Mean, Sd) UCL	0.159639
		99% Chebyshev (Mean, Sd) UCL	0.199292

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Thorium	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.900212		
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	2.2	Data are normal at 5% significance level			
Maximum	6.1				
Mean	3.58	95% UCL (Assuming Normal Distribution)			
Median	3.35	Student's-t UCL	4.212535		
Standard Deviation	1.091177				
Variance	1.190667	Gamma Distribution Test			
Coefficient of Variation	0.304798	A-D Test Statistic	0.268365		
Skewness	1.326326	A-D 5% Critical Value	0.724887		
Gamma Statistics					
k hat	13.39388	K-S Test Statistic	0.16357		
k star (bias corrected)	9.442381	K-S 5% Critical Value	0.266474		
Theta hat	0.267286	Data follow gamma distribution			
Theta star	0.379142	at 5% significance level			
nu hat	267.8776	95% UCLs (Assuming Gamma Distribution)			
nu star	188.8476	Approximate Gamma UCL	4.277559		
Approx.Chi Square Value (.05)	158.0515	Adjusted Gamma UCL	4.414312		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	153.1551	Shapiro-Wilk Test Statistic	0.969533		
Log-transformed Statistics					
Minimum of log data	0.788457	Shapiro-Wilk 5% Critical Value	0.842		
Maximum of log data	1.808289	Data are lognormal at 5% significance level			
Mean of log data	1.237568	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.284662	95% H-UCL	4.323971		
Variance of log data	0.081032	95% Chebyshev (MVUE) UCL	4.986398		
		97.5% Chebyshev (MVUE) UCL	5.597193		
		99% Chebyshev (MVUE) UCL	6.79698		
95% Non-parametric UCLs					
		CLT UCL	4.147574		
		Adj-CLT UCL (Adjusted for skewness)	4.302215		
		Mod-t UCL (Adjusted for skewness)	4.236656		
		Jackknife UCL	4.212535		
		Standard Bootstrap UCL	4.114762		
		Bootstrap-t UCL	4.435095		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	5.520194		
Use Student's-t UCL		Percentile Bootstrap UCL	4.17		
		BCA Bootstrap UCL	4.31		
		95% Chebyshev (Mean, Sd) UCL	5.084083		
		97.5% Chebyshev (Mean, Sd) UCL	5.734901		
		99% Chebyshev (Mean, Sd) UCL	7.013307		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:		
	Titanium	T	MG/KG
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.979634
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	188	Data are normal at 5% significance level	
Maximum	545		
Mean	355.7	95% UCL (Assuming Normal Distribution)	
Median	348.5	Student's-t UCL	420.8522
Standard Deviation	112.3932		
Variance	12632.23	Gamma Distribution Test	
Coefficient of Variation	0.315978	A-D Test Statistic	0.17
Skewness	0.158768	A-D 5% Critical Value	0.725036
		K-S Test Statistic	0.118676
		K-S 5% Critical Value	0.266608
Gamma Statistics			
k hat	10.47311	Data follow gamma distribution	
k star (bias corrected)	7.39784	at 5% significance level	
Theta hat	33.96318		
Theta star	48.0816	95% UCLs (Assuming Gamma Distribution)	
nu hat	209.4621	Approximate Gamma UCL	435.5264
nu star	147.9568	Adjusted Gamma UCL	451.4287
Approx.Chi Square Value (.05)	120.8382		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	116.5815	Shapiro-Wilk Test Statistic	0.963991
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	5.236442		
Maximum of log data	6.300786	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.825587	95% H-UCL	449.5955
Standard Deviation of log data	0.336512	95% Chebyshev (MVUE) UCL	523.2931
Variance of log data	0.113241	97.5% Chebyshev (MVUE) UCL	595.468
		99% Chebyshev (MVUE) UCL	737.2417
95% Non-parametric UCLs			
		CLT UCL	414.1611
		Adj-CLT UCL (Adjusted for skewness)	416.0678
		Mod-t UCL (Adjusted for skewness)	421.1496
		Jackknife UCL	420.8522
		Standard Bootstrap UCL	410.1235
		Bootstrap-t UCL	424.9652
		Hall's Bootstrap UCL	418.9841
		Percentile Bootstrap UCL	411.9
		BCA Bootstrap UCL	413
RECOMMENDATION			
Data are normal (0.05)			
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	510.6233
		97.5% Chebyshev (Mean, Sd) UCL	577.6588
		99% Chebyshev (Mean, Sd) UCL	709.337

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Tungsten	T	MG/KG
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.929334	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	0.1	Data are normal at 5% significance level			
Maximum	1.2				
Mean	0.613	95% UCL (Assuming Normal Distribution)			
Median	0.495	Student's-t UCL		0.828291	
Standard Deviation	0.371395				
Variance	0.137934	Gamma Distribution Test			
Coefficient of Variation	0.605865	A-D Test Statistic		0.316667	
Skewness	0.264801	A-D 5% Critical Value		0.734162	
Gamma Statistics					
k hat	2.417156	K-S Test Statistic		0.212093	
k star (bias corrected)	1.758676	K-S 5% Critical Value		0.269243	
Theta hat	0.253604	Data follow gamma distribution			
Theta star	0.348558	at 5% significance level			
nu hat	48.34312	95% UCLs (Assuming Gamma Distribution)			
nu star	35.17352	Approximate Gamma UCL		0.953953	
Approx.Chi Square Value (.05)	22.60212	Adjusted Gamma UCL		1.033333	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	20.86585	Shapiro-Wilk Test Statistic		0.919632	
Log-transformed Statistics					
Minimum of log data	-2.302585	Shapiro-Wilk 5% Critical Value		0.842	
Maximum of log data	0.182322	Data are lognormal at 5% significance level			
Mean of log data	-0.710281	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.772932	95% H-UCL		1.315052	
Variance of log data	0.597423	95% Chebyshev (MVUE) UCL		1.344352	
		97.5% Chebyshev (MVUE) UCL		1.649508	
		99% Chebyshev (MVUE) UCL		2.248929	
95% Non-parametric UCLs					
		CLT UCL		0.806181	
		Adj-CLT UCL (Adjusted for skewness)		0.816689	
		Mod-t UCL (Adjusted for skewness)		0.82993	
		Jackknife UCL		0.828291	
		Standard Bootstrap UCL		0.792107	
		Bootstrap-t UCL		0.836366	
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL		0.790144	
Use Student's-t UCL		Percentile Bootstrap UCL		0.803	
		BCA Bootstrap UCL		0.814	
		95% Chebyshev (Mean, Sd) UCL		1.124933	
		97.5% Chebyshev (Mean, Sd) UCL		1.346447	
		99% Chebyshev (Mean, Sd) UCL		1.781568	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Uranium	T	MG/KG
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.884313
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.66	Data are normal at 5% significance level		
Maximum	2.5	95% UCL (Assuming Normal Distribution)		
Mean	1.296	Student's-t UCL		1.657083
Median	1.1			
Standard Deviation	0.6229			
Variance	0.388004	Gamma Distribution Test		
Coefficient of Variation	0.480633	A-D Test Statistic	0.382514	
Skewness	0.971078	A-D 5% Critical Value	0.729144	
Gamma Statistics		K-S Test Statistic	0.190998	
k hat	5.348459	K-S 5% Critical Value	0.267374	
k star (bias corrected)	3.810588	Data follow gamma distribution at 5% significance level		
Theta hat	0.242313			
Theta star	0.340105	95% UCLs (Assuming Gamma Distribution)		
nu hat	106.9692	Approximate Gamma UCL	1.729791	
nu star	76.21176	Adjusted Gamma UCL	1.821216	
Approx.Chi Square Value (.05)	57.09964	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.936549	
Adjusted Chi Square Value	54.23325	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.415515	95% UCLs (Assuming Lognormal Distribution)		
Maximum of log data	0.916291	95% H-UCL	1.811338	
Mean of log data	0.162895	95% Chebyshev (MVUE) UCL	2.113184	
Standard Deviation of log data	0.455186	97.5% Chebyshev (MVUE) UCL	2.468977	
Variance of log data	0.207195	99% Chebyshev (MVUE) UCL	3.167865	
RECOMMENDATION		95% Non-parametric UCLs		
Data are normal (0.05)		CLT UCL	1.62	
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)	1.684633	
		Mod-t UCL (Adjusted for skewness)	1.667165	
		Jackknife UCL	1.657083	
		Standard Bootstrap UCL	1.605841	
		Bootstrap-t UCL	1.813403	
		Hall's Bootstrap UCL	1.73121	
		Percentile Bootstrap UCL	1.626	
		BCA Bootstrap UCL	1.692	
		95% Chebyshev (Mean, Sd) UCL	2.154608	
		97.5% Chebyshev (Mean, Sd) UCL	2.526129	
		99% Chebyshev (Mean, Sd) UCL	3.255909	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Vanadium	T	MG/KG
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.947488	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	10.1	Data are normal at 5% significance level		
Maximum	22.5			
Mean	15.02	95% UCL (Assuming Normal Distribution)		
Median	14.35	Student's-t UCL	17.28262	
Standard Deviation	3.903218			
Variance	15.23511	Gamma Distribution Test		
Coefficient of Variation	0.259868	A-D Test Statistic	0.207112	
Skewness	0.728696	A-D 5% Critical Value	0.724687	
		K-S Test Statistic	0.145451	
		K-S 5% Critical Value	0.266293	
Gamma Statistics				
k hat	17.3199	Data follow gamma distribution		
k star (bias corrected)	12.1906	at 5% significance level		
Theta hat	0.867211			
Theta star	1.232097	95% UCLs (Assuming Gamma Distribution)		
nu hat	346.398	Approximate Gamma UCL	17.55078	
nu star	243.8119	Adjusted Gamma UCL	18.03972	
Approx.Chi Square Value (.05)	208.6548			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	202.9996	Shapiro-Wilk Test Statistic	0.975452	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.312535			
Maximum of log data	3.113515	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.680236	95% H-UCL	17.71428	
Standard Deviation of log data	0.252373	95% Chebyshev (MVUE) UCL	20.26002	
Variance of log data	0.063692	97.5% Chebyshev (MVUE) UCL	22.53101	
		99% Chebyshev (MVUE) UCL	26.99193	
		95% Non-parametric UCLs		
		CLT UCL	17.05025	
		Adj-CLT UCL (Adjusted for skewness)	17.35417	
		Mod-t UCL (Adjusted for skewness)	17.33003	
		Jackknife UCL	17.28262	
		Standard Bootstrap UCL	16.88597	
		Bootstrap-t UCL	17.74618	
		Hall's Bootstrap UCL	17.71059	
		Percentile Bootstrap UCL	17.06	
		BCA Bootstrap UCL	17.11	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	20.40021	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	22.72824	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	27.30119	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Zinc	T	MG/KG
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.94121	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	14.3	Data are normal at 5% significance level			
Maximum	52.7				
Mean	34.34	95% UCL (Assuming Normal Distribution)			
Median	36.45	Student's-t UCL		41.96168	
Standard Deviation	13.14806				
Variance	172.8716	Gamma Distribution Test			
Coefficient of Variation	0.382879	A-D Test Statistic		0.34882	
Skewness	-0.028025	A-D 5% Critical Value		0.727914	
		K-S Test Statistic		0.172193	
		K-S 5% Critical Value		0.26715	
Gamma Statistics		Data follow gamma distribution			
k hat	6.749222	at 5% significance level			
k star (bias corrected)	4.791122				
Theta hat	5.087994	95% UCLs (Assuming Gamma Distribution)			
Theta star	7.167423	Approximate Gamma UCL		44.32307	
nu hat	134.9844	Adjusted Gamma UCL		46.38156	
nu star	95.82244				
Approx.Chi Square Value (.05)	74.23995	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.925053	
Adjusted Chi Square Value	70.94506	Shapiro-Wilk 5% Critical Value		0.842	
		Data are lognormal at 5% significance level			
Log-transformed Statistics		95% UCLs (Assuming Lognormal Distribution)			
Minimum of log data	2.66026	95% H-UCL		47.19928	
Maximum of log data	3.964615	95% Chebyshev (MVUE) UCL		55.16779	
Mean of log data	3.460403	97.5% Chebyshev (MVUE) UCL		64.09442	
Standard Deviation of log data	0.427539	99% Chebyshev (MVUE) UCL		81.62905	
Variance of log data	0.18279				
		95% Non-parametric UCLs			
		CLT UCL		41.17894	
		Adj-CLT UCL (Adjusted for skewness)		41.13957	
		Mod-t UCL (Adjusted for skewness)		41.95554	
		Jackknife UCL		41.96168	
		Standard Bootstrap UCL		40.644	
		Bootstrap-t UCL		42.3006	
		Hall's Bootstrap UCL		41.03774	
RECOMMENDATION		Percentile Bootstrap UCL		41.29	
Data are normal (0.05)		BCA Bootstrap UCL		40.76	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		52.46335	
		97.5% Chebyshev (Mean, Sd) UCL		60.30534	
		99% Chebyshev (Mean, Sd) UCL		75.70941	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Zirconium	T	MG/KG
Raw Statistics			Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.961823		
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	0.87	Data are normal at 5% significance level			
Maximum	2.4				
Mean	1.573	95% UCL (Assuming Normal Distribution)			
Median	1.55	Student's-t UCL	1.84662		
Standard Deviation	0.472018				
Variance	0.222801	Gamma Distribution Test			
Coefficient of Variation	0.300075	A-D Test Statistic	0.280083		
Skewness	0.209269	A-D 5% Critical Value	0.724972		
		K-S Test Statistic	0.184745		
		K-S 5% Critical Value	0.26655		
Gamma Statistics		Data follow gamma distribution			
k hat	11.7315	at 5% significance level			
k star (bias corrected)	8.278717				
Theta hat	0.134083	95% UCLs (Assuming Gamma Distribution)			
Theta star	0.190005	Approximate Gamma UCL	1.903643		
nu hat	234.63	Adjusted Gamma UCL	1.969009		
nu star	165.5743				
Approx.Chi Square Value (.05)	136.8158	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.945435		
Adjusted Chi Square Value	132.2739	Shapiro-Wilk 5% Critical Value	0.842		
		Data are lognormal at 5% significance level			
Log-transformed Statistics					
Minimum of log data	-0.139262	95% UCLs (Assuming Lognormal Distribution)			
Maximum of log data	0.875469	95% H-UCL	1.955486		
Mean of log data	0.409759	95% Chebyshev (MVUE) UCL	2.26937		
Standard Deviation of log data	0.316853	97.5% Chebyshev (MVUE) UCL	2.569484		
Variance of log data	0.100396	99% Chebyshev (MVUE) UCL	3.159001		
		95% Non-parametric UCLs			
		CLT UCL	1.818519		
		Adj-CLT UCL (Adjusted for skewness)	1.829074		
		Mod-t UCL (Adjusted for skewness)	1.848266		
		Jackknife UCL	1.84662		
		Standard Bootstrap UCL	1.802465		
		Bootstrap-t UCL	1.865986		
		Hall's Bootstrap UCL	1.890439		
RECOMMENDATION					
Data are normal (0.05)		Percentile Bootstrap UCL	1.813		
		BCA Bootstrap UCL	1.812		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.223632		
		97.5% Chebyshev (Mean, Sd) UCL	2.505161		
		99% Chebyshev (Mean, Sd) UCL	3.05817		

Table 8
Summary Statistics
Assabet River Sediments, Downstream

Parameter	Frequency of Detection	Percent Detected	Range of Non-Defects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD
VOCs (UG/KG)															
1,1-Dichloroethene	1 / 5	20%	0.976 - 2.17	0.8 - 0.8	0.787	0.213	0.271	-0.004338	Normal	0.989	Student's-t UCL	1.09	*	0.8	
Acetone	5 / 5	100%	1 - 5.9	214	87.5	89.1	1.018	2.148	Lognormal	5.124	95% H-UCL			214	
Acetone (log-transformed)	2 / 5	40%	4.88 - 10.8	4.1 - 7.8	4.69	2.03	0.433	0.886	Normal	6.630	Student's-t UCL	1034	21507	214	3692
Carbon disulfide	2 / 5	40%	4.88 - 10.8	11.3 - 45.8	18.28	18.63	1.019	0.917	Normal	36.047	Student's-t UCL	7.8	*	7.8	
Methyl ethyl ketone	3 / 5	60%	4.88 - 6.55	11.3 - 45.8	18.28	18.63	1.019	0.917	Normal	36.047	Student's-t UCL	58.0	96.6	45.8	74.2
Toluene	1 / 5	20%	0.976 - 2.17	0.77 - 0.77	0.75	0.22	0.293	0.785	Normal	0.957	Student's-t UCL	1.09	*	0.77	
Metals (MG/KG)															
Aluminum	5 / 5	100%	1 - 3130	7390	5774	2139	0.370	-0.653	Non-parametric	7766.678	Modified-t UCL	7390	*	7390	
Antimony	3 / 5	60%	0.0509 - 0.082	0.17 - 0.22	0.133	0.093	0.699	-0.454	Normal	0.222	Student's-t UCL	0.3	0.52	0.22	0.4
Arsenic	5 / 5	100%	1 - 2.9	121	29.16	51.4	1.763	2.213	Lognormal	157.023	99% Chebyshev (MVUE) UCL			121	
Arsenic (log-transformed)	5 / 5	100%	1 - 2.288	1518								251	5806	121	936
Barium	5 / 5	100%	1 - 19.1	73.9	41.28	22.03	0.534	0.834	Normal	62.288	Student's-t UCL	88.2	133.9	73.9	107.4
Beryllium	5 / 5	100%	1 - 0.14	0.6	0.326	0.176	0.540	0.964	Normal	0.494	Student's-t UCL	0.7	1.06	0.6	0.9
Cadmium	5 / 5	100%	1 - 0.11	1.1	0.436	0.417	0.956	1.321	Normal	0.833	Student's-t UCL	1.3	2.19	1.1	1.7
Calcium	5 / 5	100%	1 - 534	1760	1268.8	483	0.381	-0.846	Normal	1729.296	Student's-t UCL	2298.6	3298	1760	2717.8
Chromium	5 / 5	100%	1 - 17.1	469	135.8	194.1	1.429	1.848	G/NP	724.295	Approximate Gamma UCL	469	*	469	
Cobalt	5 / 5	100%	1 - 3.6	16.4	9.62	5.83	0.606	0.005	Normal	15.180	Student's-t UCL	22.0	34.1	16.4	27.1
Copper	5 / 5	100%	1 - 5.4	73.8	34.86	34.91	1.001	0.586	G/NP	133.483	Approximate Gamma UCL	73.8	*	73.8	
Iron	5 / 5	100%	1 - 4690	114000	29258	47465	1.622	2.214	Lognormal	77328.470	95% Chebyshev (MVUE) UCL			114000	
Iron (log-transformed)	5 / 5	100%	1 - 9.469	1273								195445	2725455	114000	590072
Lead	5 / 5	100%	1 - 5.2	327	94.72	134.2	1.417	1.915	G/NP	517.088	Approximate Gamma UCL	327	*	327	
Magnesium	5 / 5	100%	1 - 1060	2640	1776	661.7	0.373	0.104	Normal	2406.846	Student's-t UCL	3186.7	4556	2640	3761.1
Manganese	5 / 5	100%	1 - 83.4	564	262.1	180	0.687	1.531	Normal	433.668	Student's-t UCL	645.9	1018	564	802.1
Mercury	5 / 5	100%	1 - 0.019	0.39	0.191	0.167	0.874	0.455	Normal	0.351	Student's-t UCL	0.5	0.89	0.39	0.7
Molybdenum	5 / 5	100%	1 - 0.56	8.4	2.61	3.29	1.261	2.081	G/NP	9.813	Approximate Gamma UCL	8.4	*	8.4	
Nickel	5 / 5	100%	1 - 6.1	26.7	13.24	8.39	0.634	1.240	Normal	21.238	Student's-t UCL	31.1	48.5	26.7	38.4
Potassium	5 / 5	100%	1 - 380	1040	654	265.8	0.406	0.575	Normal	907.418	Student's-t UCL	1220.7	1771	1040	1451.4
Selenium	5 / 5	100%	1 - 0.59	1.5	1.094	0.373	0.341	-0.338	Normal	1.450	Student's-t UCL	1.9	2.66	1.5	2.2
Silver	5 / 5	100%	1 - 0.057	0.57	0.269	0.249	0.926	0.612	Normal	0.507	Student's-t UCL	0.8	1.31	0.57	1.0
Sodium	5 / 5	100%	1 - 73	251	159.8	66.8	0.418	0.144	Normal	223.490	Student's-t UCL	302.2	440	251	360.2
Thallium	5 / 5	100%	1 - 0.05	0.18	0.126	0.058	0.460	-0.588	Normal	0.181	Student's-t UCL	0.2	0.37	0.18	0.3
Thorium	5 / 5	100%	1 - 1.4	4.5	2.94	1.3	0.442	-0.188	Normal	4.177	Student's-t UCL	5.7	8.4	4.5	6.8
Titanium	5 / 5	100%	1 - 190	438	297	101.3	0.341	0.359	Normal	393.542	Student's-t UCL	513.0	722	438	600.9
Tungsten	5 / 5	100%	1 - 0.59	1.9	1	0.533	0.533	1.678	Normal	1.506	Student's-t UCL	2.1	3.24	1.9	2.6
Uranium	5 / 5	100%	1 - 0.48	1.3	1	0.323	0.323	-1.266	Normal	1.306	Student's-t UCL	1.7	2.36	1.3	2.0
Vanadium	5 / 5	100%	1 - 7.6	50	21.76	17.43	0.801	1.345	Normal	38.382	Student's-t UCL	58.9	95	50	74.1
Zinc	5 / 5	100%	1 - 26.4	260	95.68	97.89	1.023	1.653	Normal	189.013	Student's-t UCL	304.4	507	260	389.4
Zirconium	5 / 5	100%	1 - 0.72	4	1.58	1.36	0.861	2.148	Lognormal	5.124	95% H-UCL			4	
Zirconium (log-transformed)	5 / 5	100%	1 - 0.246	0.663								5	21	4	9

Notes: 1. For 5 samples, the non-parametric 95th percentile is the 5th ordered sample, i.e., the same as the maximum.

2. For 5 samples, the non-parametric one-sided 95% UCL on the mean is the 4th ordered sample.

3. The Student-t value for 5-1 = 4 degrees of freedom and 95% level of confidence is 2.132.

4. The factor for a one-sided 95% coverage, 95% tolerance limit is 4.202.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

7. The mean and standard deviation are computed with NDs replaced with DL/2.

8. Shaded cell highlights an ordered value that is a 1/2DL value.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch Variable:	1,1-Dichloroethene	
Raw Statistics			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.893978
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	5.9	Data are normal at 5% significance level	
Maximum	214		
Mean	87.5	95% UCL (Assuming Normal Distribution)	
Median	52.4	Student's-t UCL	172.4111
Standard Deviation	89.06228		
Variance	7932.09	Gamma Distribution Test	
Coefficient of Variation	1.017855	A-D Test Statistic	0.227937
Skewness	0.780305	A-D 5% Critical Value	0.694294
Gamma Statistics		K-S Test Statistic	0.206268
k hat	0.893129	K-S 5% Critical Value	0.365376
k star (bias corrected)	0.490585	Data follow gamma distribution	
Theta hat	97.97016	at 5% significance level	
Theta star	178.3585	95% UCLs (Assuming Gamma Distribution)	
nu hat	8.931291	Approximate Gamma UCL	387.2298
nu star	4.90585	Adjusted Gamma UCL	842.9818
Approx. Chi Square Value (.05)	1.108545		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	0.509218	Shapiro-Wilk Test Statistic	0.953402
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762
Minimum of log data	1.774952	Data are lognormal at 5% significance level	
Maximum of log data	5.365976	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.81645	95% H-UCL	21908.77
Standard Deviation of log data	1.46566	95% Chebyshev (MVUE) UCL	349.3546
Variance of log data	2.14816	97.5% Chebyshev (MVUE) UCL	458.3663
		99% Chebyshev (MVUE) UCL	672.4988
95% Non-parametric UCLs			
		CLT UCL	153.0143
		Adj-CLT UCL (Adjusted for skewness)	167.8657
		Mod-t UCL (Adjusted for skewness)	174.7277
		Jackknife UCL	172.4111
		Standard Bootstrap UCL	146.0436
		Bootstrap-t UCL	314.5347
RECOMMENDATION		Hall's Bootstrap UCL	693.6666
Data are normal (0.05)		Percentile Bootstrap UCL	147.64
		BCA Bootstrap UCL	154.08
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	261.1143
		97.5% Chebyshev (Mean, Sd) UCL	336.2374
		99% Chebyshev (Mean, Sd) UCL	483.8021

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Acetone	T
Raw Statistics			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.946951
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	0.488	Data are normal at 5% significance level	
Maximum	1.085		
Mean	0.7486	95% UCL (Assuming Normal Distribution)	
Median	0.745	Student's-t UCL	0.956556
Standard Deviation	0.218122		
Variance	0.047577	Gamma Distribution Test	
Coefficient of Variation	0.291374	A-D Test Statistic	0.250419
Skewness	0.785359	A-D 5% Critical Value	0.678782
Gamma Statistics		K-S Test Statistic	0.222389
k hat	15.13813	K-S 5% Critical Value	0.357369
k star (bias corrected)	6.188584	Data follow gamma distribution at 5% significance level	
Theta hat	0.049451		
Theta star	0.120965	95% UCLs (Assuming Gamma Distribution)	
nu hat	151.3813	Approximate Gamma UCL	1.034364
nu star	61.88584	Adjusted Gamma UCL	1.202829
Approx.Chi Square Value (.05)	44.78863		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	38.51566	Shapiro-Wilk Test Statistic	0.973221
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762
Minimum of log data	-0.71744	Data are lognormal at 5% significance level	
Maximum of log data	0.08158		
Mean of log data	-0.322943	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.288925	95% H-UCL	1.064217
Variance of log data	0.083478	95% Chebyshev (MVUE) UCL	1.168799
		97.5% Chebyshev (MVUE) UCL	1.35068
		99% Chebyshev (MVUE) UCL	1.707949
95% Non-parametric UCLs			
		CLT UCL	0.909051
		Adj-CLT UCL (Adjusted for skewness)	0.945659
		Mod-t UCL (Adjusted for skewness)	0.962266
		Jackknife UCL	0.956556
		Standard Bootstrap UCL	0.891722
		Bootstrap-t UCL	1.003486
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	1.160428
		Percentile Bootstrap UCL	0.8976
		BCA Bootstrap UCL	0.8976
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.173798
		97.5% Chebyshev (Mean, Sd) UCL	1.357782
		99% Chebyshev (Mean, Sd) UCL	1.719183

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch	Variable:	Carbon disulfide
Raw Statistics			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.750001
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	3130	Data not normal at 5% significance level	
Maximum	7390		
Mean	5774	95% UCL (Assuming Normal Distribution)	
Median	7210	Student's-t UCL	7813.215
Standard Deviation	2138.909		
Variance	4574930	Gamma Distribution Test	
Coefficient of Variation	0.370438	A-D Test Statistic	0.754164
Skewness	-0.652725	A-D 5% Critical Value	0.679682
Gamma Statistics		K-S Test Statistic	0.376923
k hat	7.80811	K-S 5% Critical Value	0.357906
k star (bias corrected)	3.256578	Data do not follow gamma distribution	
Theta hat	739.4875	at 5% significance level	
Theta star	1773.027	95% UCLs (Assuming Gamma Distribution)	
nu hat	78.0811	Approximate Gamma UCL	9163.89
nu star	32.56578	Adjusted Gamma UCL	11412.25
Approx.Chi Square Value (.05)	20.5191	Lognormal Distribution Test	
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic	0.760277
Adjusted Chi Square Value	16.47657	Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	8.048788		
Maximum of log data	8.907883	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	8.59572	95% H-UCL	10445.91
Standard Deviation of log data	0.420716	95% Chebyshev (MVUE) UCL	10527.88
Variance of log data	0.177002	97.5% Chebyshev (MVUE) UCL	12573.41
		99% Chebyshev (MVUE) UCL	16591.45
95% Non-parametric UCLs			
		CLT UCL	7347.383
		Adj-CLT UCL (Adjusted for skewness)	7049.028
		Mod-t UCL (Adjusted for skewness)	7766.678
		Jackknife UCL	7813.215
		Standard Bootstrap UCL	7168.693
		Bootstrap-t UCL	7618.881
RECOMMENDATION		Hall's Bootstrap UCL	6492.93
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	7316
		BCA Bootstrap UCL	6664
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	9943.5
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	11747.65
		99% Chebyshev (Mean, Sd) UCL	15291.54
Recommended UCL exceeds the maximum observation			

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Methyl ethyl ketone	T
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.702077	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.56	Data not normal at 5% significance level		
Maximum	8.4			
Mean	2.606	95% UCL (Assuming Normal Distribution)		
Median	1.3	Student's-t UCL	5.739172	
Standard Deviation	3.286348			
Variance	10.80008	Gamma Distribution Test		
Coefficient of Variation	1.26107	A-D Test Statistic	0.479505	
Skewness	2.081445	A-D 5% Critical Value	0.690162	
		K-S Test Statistic	0.277482	
		K-S 5% Critical Value	0.363758	
Gamma Statistics				
k hat	1.118969	Data follow gamma distribution		
k star (bias corrected)	0.580921	at 5% significance level		
Theta hat	2.328931			
Theta star	4.485982	95% UCLs (Assuming Gamma Distribution)		
nu hat	11.18969	Approximate Gamma UCL	9.813342	
nu star	5.809207	Adjusted Gamma UCL	19.57022	
Approx.Chi Square Value (.05)	1.542675			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	0.773563	Shapiro-Wilk Test Statistic	0.920474	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics				
Minimum of log data	-0.579818	Data are lognormal at 5% significance level		
Maximum of log data	2.128232			
Mean of log data	0.448512	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.057987	95% H-UCL	41.90695	
Variance of log data	1.119336	95% Chebyshev (MVUE) UCL	7.05831	
		97.5% Chebyshev (MVUE) UCL	9.082646	
		99% Chebyshev (MVUE) UCL	13.05906	
		95% Non-parametric UCLs		
		CLT UCL	5.02344	
		Adj-CLT UCL (Adjusted for skewness)	6.485243	
		Mod-t UCL (Adjusted for skewness)	5.967184	
		Jackknife UCL	5.739172	
		Standard Bootstrap UCL	4.745379	
		Bootstrap-t UCL	19.79097	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	16.22918	
		Percentile Bootstrap UCL	5.412	
		BCA Bootstrap UCL	5.594	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	9.012271	
		97.5% Chebyshev (Mean, Sd) UCL	11.78427	
		99% Chebyshev (Mean, Sd) UCL	17.22932	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Toluene	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.952491		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	2.44	Data are normal at 5% significance level			
Maximum	7.8				
Mean	4.691	95% UCL (Assuming Normal Distribution)			
Median	4.1	Student's-t UCL	6.62954		
Standard Deviation	2.033311				
Variance	4.134355	Gamma Distribution Test			
Coefficient of Variation	0.433449	A-D Test Statistic	0.196337		
Skewness	0.885516	A-D 5% Critical Value	0.680023		
		K-S Test Statistic	0.185693		
		K-S 5% Critical Value	0.35804		
Gamma Statistics		Data follow gamma distribution			
k hat	6.876638	at 5% significance level			
k star (bias corrected)	2.883989				
Theta hat	0.682165	95% UCLs (Assuming Gamma Distribution)			
Theta star	1.626567	Approximate Gamma UCL	7.694969		
nu hat	68.76638	Adjusted Gamma UCL	9.744129		
nu star	28.83989				
Approx.Chi Square Value (.05)	17.58134	Lognormal Distribution Test			
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic	0.991529		
Adjusted Chi Square Value	13.88404	Shapiro-Wilk 5% Critical Value	0.762		
		Data are lognormal at 5% significance level			
Log-transformed Statistics					
Minimum of log data	0.891998	95% UCLs (Assuming Lognormal Distribution)			
Maximum of log data	2.054124	95% H-UCL	8.664395		
Mean of log data	1.471177	95% Chebyshev (MVUE) UCL	8.622479		
Standard Deviation of log data	0.433138	97.5% Chebyshev (MVUE) UCL	10.32432		
Variance of log data	0.187609	99% Chebyshev (MVUE) UCL	13.66727		
		95% Non-parametric UCLs			
		CLT UCL	6.186706		
		Adj-CLT UCL (Adjusted for skewness)	6.571484		
		Mod-t UCL (Adjusted for skewness)	6.689557		
		Jackknife UCL	6.62954		
		Standard Bootstrap UCL	6.02086		
		Bootstrap-t UCL	7.892876		
RECOMMENDATION		Hall's Bootstrap UCL	18.60263		
Data are normal (0.05)		Percentile Bootstrap UCL	6.1		
		BCA Bootstrap UCL	6.1		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	8.654653		
		97.5% Chebyshev (Mean, Sd) UCL	10.36973		
		99% Chebyshev (Mean, Sd) UCL	13.73866		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1		Variable:	Aluminum	T	
Raw Statistics		Normal Distribution Test				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.828894		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value		0.762		
Minimum	0.02545	Data are normal at 5% significance level				
Maximum	0.22					
Mean	0.13329	95% UCL (Assuming Normal Distribution)				
Median	0.17	Student's-t UCL		0.222341		
Standard Deviation	0.093404					
Variance	0.008724	Gamma Distribution Test				
Coefficient of Variation	0.700761	A-D Test Statistic		0.587142		
Skewness	-0.453733	A-D 5% Critical Value		0.685709		
Gamma Statistics		K-S Test Statistic		0.320138		
k hat	1.675588	K-S 5% Critical Value		0.361249		
k star (bias corrected)	0.803568	Data follow gamma distribution				
Theta hat	0.079548	at 5% significance level				
Theta star	0.165873	95% UCLs (Assuming Gamma Distribution)				
nu hat	16.75588	Approximate Gamma UCL		0.388773		
nu star	8.035684	Adjusted Gamma UCL		0.671501		
Approx.Chi Square Value (.05)	2.755017					
Adjusted Level of Significance	0.0086	Lognormal Distribution Test				
Adjusted Chi Square Value	1.595048	Shapiro-Wilk Test Statistic		0.812061		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.762		
Minimum of log data	-3.67104	Data are lognormal at 5% significance level				
Maximum of log data	-1.514128					
Mean of log data	2.342391	95% UCLs (Assuming Lognormal Distribution)				
Standard Deviation of log data	1.014075	95% H-UCL		1.992802		
Variance of log data	1.028349	95% Chebyshev (MVUE) UCL		0.409093		
		97.5% Chebyshev (MVUE) UCL		0.52491		
		99% Chebyshev (MVUE) UCL		0.752409		
95% Non-parametric UCLs						
		CLT UCL		0.201998		
		Adj-CLT UCL (Adjusted for skewness)		0.192942		
		Mod-t UCL (Adjusted for skewness)		0.220928		
		Jackknife UCL		0.222341		
		Standard Bootstrap UCL		0.195359		
		Bootstrap-t UCL		0.207426		
RECOMMENDATION		Hall's Bootstrap UCL		0.166309		
Data are normal (0.05)		Percentile Bootstrap UCL		0.196		
		BCA Bootstrap UCL		0.1802		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		0.315369		
		97.5% Chebyshev (Mean, Sd) UCL		0.394154		
		99% Chebyshev (Mean, Sd) UCL		0.548914		
Recommended UCL exceeds the maximum observation						

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Antimony	T	
Raw Statistics					
Number of Valid Samples	5	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.60866	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	2.9	Data not normal at 5% significance level			
Maximum	121				
Mean	29.16	95% UCL (Assuming Normal Distribution)			
Median	8.5	Student's-t UCL	78.20935		
Standard Deviation	51.44728				
Variance	2646.823	Gamma Distribution Test			
Coefficient of Variation	1.76431	A-D Test Statistic	0.71723		
Skewness	2.212892	A-D 5% Critical Value	0.707222		
Gamma Statistics					
k hat	0.573515	K-S Test Statistic	0.379878		
k star (bias corrected)	0.362739	K-S 5% Critical Value	0.370164		
Theta hat	50.84436	Data do not follow gamma distribution at 5% significance level			
Theta star	80.38831	95% UCLs (Assuming Gamma Distribution)			
nu hat	5.73515	Approximate Gamma UCL	182.3606		
nu star	3.627393	Adjusted Gamma UCL	463.7456		
Approx. Chi Square Value (.05)	0.580031				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	0.228088	Shapiro-Wilk Test Statistic	0.837573		
Log-transformed Statistics					
Minimum of log data	1.064711	Shapiro-Wilk 5% Critical Value	0.762		
Maximum of log data	4.795791	Data are lognormal at 5% significance level			
Mean of log data	2.288197	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	1.518624	95% H-UCL	7414.829		
Variance of log data	2.306218	95% Chebyshev (MVUE) UCL	81.2744		
		97.5% Chebyshev (MVUE) UCL	106.828		
		99% Chebyshev (MVUE) UCL	157.023		
95% Non-parametric UCLs					
		CLT UCL	67.00467		
		Adj-CLT UCL (Adjusted for skewness)	91.33416		
		Mod-t UCL (Adjusted for skewness)	82.00426		
		Jackknife UCL	78.20935		
		Standard Bootstrap UCL	62.45366		
		Bootstrap-t UCL	436.1885		
RECOMMENDATION					
Data are lognormal (0.05)			Hall's Bootstrap UCL	505.7472	
Use 99% Chebyshev (MVUE) UCL			Percentile Bootstrap UCL	73.8	
			BCA Bootstrap UCL	75.26	
			95% Chebyshev (Mean, Sd) UCL	129.4492	
			97.5% Chebyshev (Mean, Sd) UCL	172.8444	
			99% Chebyshev (Mean, Sd) UCL	258.086	
Recommended UCL exceeds the maximum observation					

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch	Variable:	Arsenic	T	
Raw Statistics					
Number of Valid Samples	5	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.938551	
Number of Unique Samples	5		Shapiro-Wilk 5% Critical Value	0.762	
Minimum	19.1		Data are normal at 5% significance level		
Maximum	73.9				
Mean	41.28		95% UCL (Assuming Normal Distribution)		
Median	35		Student's-t UCL	62.28765	
Standard Deviation	22.03468				
Variance	485.527	Gamma Distribution Test			
Coefficient of Variation	0.533786		A-D Test Statistic	0.207488	
Skewness	0.83437		A-D 5% Critical Value	0.680964	
			K-S Test Statistic	0.172188	
			K-S 5% Critical Value	0.358377	
Gamma Statistics					
k hat	4.520721		Data follow gamma distribution		
k star (bias corrected)	1.941622		at 5% significance level		
Theta hat	9.131286				
Theta star	21.26058		95% UCLs (Assuming Gamma Distribution)		
nu hat	45.20721		Approximate Gamma UCL	76.91601	
nu star	19.41622		Adjusted Gamma UCL	104.0068	
Approx. Chi Square Value (.05)	10.42048				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	7.706239		Shapiro-Wilk Test Statistic	0.981894	
			Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics					
Minimum of log data	2.949688		Data are lognormal at 5% significance level		
Maximum of log data	4.302713				
Mean of log data	3.605718		95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.537667		95% H-UCL	97.08165	
Variance of log data	0.289085		95% Chebyshev (MVUE) UCL	83.99029	
			97.5% Chebyshev (MVUE) UCL	102.492	
			99% Chebyshev (MVUE) UCL	138.835	
		95% Non-parametric UCLs			
			CLT UCL	57.48873	
			Adj-CLT UCL (Adjusted for skewness)	61.41767	
			Mod-t UCL (Adjusted for skewness)	62.90049	
			Jackknife UCL	62.28765	
			Standard Bootstrap UCL	55.60962	
			Bootstrap-t UCL	83.53725	
RECOMMENDATION					
Data are normal (0.05)			Hall's Bootstrap UCL	180.5414	
			Percentile Bootstrap UCL	57.44	
			BCA Bootstrap UCL	57.44	
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	84.23349	
			97.5% Chebyshev (Mean, Sd) UCL	102.8195	
			99% Chebyshev (Mean, Sd) UCL	139.3281	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Barium	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.931611		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	0.14	Data are normal at 5% significance level			
Maximum	0.6				
Mean	0.326	95% UCL (Assuming Normal Distribution)			
Median	0.33	Student's-t UCL	0.493672		
Standard Deviation	0.175869				
Variance	0.03093	Gamma Distribution Test			
Coefficient of Variation	0.539476	A-D Test Statistic	0.225536		
Skewness	0.964292	A-D 5% Critical Value	0.681036		
		K-S Test Statistic	0.178447		
Gamma Statistics		K-S 5% Critical Value	0.358396		
k hat	4.384309	Data follow gamma distribution			
k star (bias corrected)	1.887057	at 5% significance level			
Theta hat	0.074356				
Theta star	0.172756	95% UCLs (Assuming Gamma Distribution)			
nu hat	43.84309	Approximate Gamma UCL	0.613861		
nu star	18.87057	Adjusted Gamma UCL	0.834662		
Approx. Chi Square Value (.05)	10.0215				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	7.370412	Shapiro-Wilk Test Statistic	0.978528		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	-1.966113				
Maximum of log data	-0.510826	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-1.239214	95% H-UCL	0.795541		
Standard Deviation of log data	0.551172	95% Chebyshev (MVUE) UCL	0.672897		
Variance of log data	0.303791	97.5% Chebyshev (MVUE) UCL	0.822887		
		99% Chebyshev (MVUE) UCL	1.117514		
		95% Non-parametric UCLs			
		CLT UCL	0.45537		
		Adj-CLT UCL (Adjusted for skewness)	0.491611		
		Mod-t UCL (Adjusted for skewness)	0.499325		
		Jackknife UCL	0.493672		
		Standard Bootstrap UCL	0.442377		
		Bootstrap-t UCL	0.56396		
RECOMMENDATION		Hall's Bootstrap UCL	0.573988		
Data are normal (0.05)		Percentile Bootstrap UCL	0.446		
		BCA Bootstrap UCL	0.468		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.668832		
		97.5% Chebyshev (Mean, Sd) UCL	0.817176		
		99% Chebyshev (Mean, Sd) UCL	1.108569		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Beryllium	T	
	Raw Statistics			Normal Distribution Test	
Number of Valid Samples	5		Shapiro-Wilk Test Statistic	0.839982	
Number of Unique Samples	5		Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.11		Data are normal at 5% significance level		
Maximum	1.1				
Mean	0.436		95% UCL (Assuming Normal Distribution)		
Median	0.23		Student's-t UCL	0.833439	
Standard Deviation	0.416869				
Variance	0.17378		Gamma Distribution Test		
Coefficient of Variation	0.956122		A-D Test Statistic	0.344214	
Skewness	1.320717		A-D 5% Critical Value	0.68647	
			K-S Test Statistic	0.262363	
	Gamma Statistics		K-S 5% Critical Value	0.361715	
k hat	1.491878		Data follow gamma distribution		
k star (bias corrected)	0.730085		at 5% significance level		
Theta hat	0.292249				
Theta star	0.597191		95% UCLs (Assuming Gamma Distribution)		
nu hat	14.91878		Approximate Gamma UCL	1.362354	
nu star	7.300846		Adjusted Gamma UCL	2.446319	
Approx.Chi Square Value (.05)	2.336521				
Adjusted Level of Significance	0.0086		Lognormal Distribution Test		
Adjusted Chi Square Value	1.301208		Shapiro-Wilk Test Statistic	0.934977	
			Shapiro-Wilk 5% Critical Value	0.762	
	Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-2.207275				
Maximum of log data	0.09531		95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-1.201279		95% H-UCL	4.678967	
Standard Deviation of log data	0.962185		95% Chebyshev (MVUE) UCL	1.197042	
Variance of log data	0.925801		97.5% Chebyshev (MVUE) UCL	1.530311	
			99% Chebyshev (MVUE) UCL	2.184953	
			95% Non-parametric UCLs		
			CLT UCL	0.742649	
			Adj-CLT UCL (Adjusted for skewness)	0.860307	
			Mod-t UCL (Adjusted for skewness)	0.851791	
			Jackknife UCL	0.833439	
			Standard Bootstrap UCL	0.708412	
			Bootstrap-t UCL	2.70026	
	RECOMMENDATION		Hall's Bootstrap UCL	2.875564	
Data are normal (0.05)			Percentile Bootstrap UCL	0.722	
			BCA Bootstrap UCL	0.794	
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	1.248628	
			97.5% Chebyshev (Mean, Sd) UCL	1.600253	
			99% Chebyshev (Mean, Sd) UCL	2.290951	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Cadmium	T	
Raw Statistics					
Number of Valid Samples	5	Normal Distribution Test			
Number of Unique Samples	5	Shapiro-Wilk Test Statistic	0.932884		
Minimum	534	Shapiro-Wilk 5% Critical Value	0.762		
Maximum	1760	Data are normal at 5% significance level			
Mean	1268.8	95% UCL (Assuming Normal Distribution)			
Median	1260	Student's-t UCL	1729.296		
Standard Deviation	483.0085				
Variance	233297.2	Gamma Distribution Test			
Coefficient of Variation	0.380681	A-D Test Statistic	0.393617		
Skewness	-0.845856	A-D 5% Critical Value	0.680115		
Gamma Statistics					
k hat	6.624947	K-S Test Statistic	0.253035		
k star (bias corrected)	2.783312	K-S 5% Critical Value	0.358076		
Theta hat	191.5185	Data follow gamma distribution			
Theta star	455.8598	at 5% significance level			
nu hat	66.24947	95% UCLs (Assuming Gamma Distribution)			
nu star	27.83312	Approximate Gamma UCL	2102.529		
Approx.Chi Square Value (.05)	16.79628	Adjusted Gamma UCL	2676.19		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	13.19587	Shapiro-Wilk Test Statistic	0.8555		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics					
Minimum of log data	6.280396	Data are lognormal at 5% significance level			
Maximum of log data	7.473069	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	7.06846	95% H-UCL	2596.728		
Standard Deviation of log data	0.474789	95% Chebyshev (MVUE) UCL	2461.73		
Variance of log data	0.225425	97.5% Chebyshev (MVUE) UCL	2971.569		
		99% Chebyshev (MVUE) UCL	3973.048		
95% Non-parametric UCLs					
		CLT UCL	1624.101		
		Adj-CLT UCL (Adjusted for skewness)	1536.792		
		Mod-t UCL (Adjusted for skewness)	1715.677		
		Jackknife UCL	1729.296		
		Standard Bootstrap UCL	1582.429		
		Bootstrap-t UCL	1644.129		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	1648.026		
		Percentile Bootstrap UCL	1588		
		BCA Bootstrap UCL	1514		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2210.357		
		97.5% Chebyshev (Mean, Sd) UCL	2617.769		
		99% Chebyshev (Mean, Sd) UCL	3418.052		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Calcium	T
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.72506	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	17.1	Data not normal at 5% significance level		
Maximum	469			
Mean	135.78	95% UCL (Assuming Normal Distribution)		
Median	24.2	Student's-t UCL	320.8542	
Standard Deviation	194.1221			
Variance	37683.39	Gamma Distribution Test		
Coefficient of Variation	1.429681	A-D Test Statistic	0.577276	
Skewness	1.848401	A-D 5% Critical Value	0.700787	
Gamma Statistics		K-S Test Statistic	0.356336	
k hat	0.700103	K-S 5% Critical Value	0.367658	
k star (bias corrected)	0.413375	Data follow gamma distribution		
Theta hat	193.9429	at 5% significance level		
Theta star	328.4673	95% UCLs (Assuming Gamma Distribution)		
nu hat	7.001029	Approximate Gamma UCL	724.2945	
nu star	4.133745	Adjusted Gamma UCL	1728.669	
Approx.Chi Square Value (.05)	0.774933	Lognormal Distribution Test		
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic	0.838195	
Adjusted Chi Square Value	0.324689	Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.839078			
Maximum of log data	6.150603	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.047832	95% H-UCL	25227.25	
Standard Deviation of log data	1.454671	95% Chebyshev (MVUE) UCL	433.9656	
Variance of log data	2.116067	97.5% Chebyshev (MVUE) UCL	569.1564	
		99% Chebyshev (MVUE) UCL	834.7126	
95% Non-parametric UCLs				
		CLT UCL	278.5764	
		Adj-CLT UCL (Adjusted for skewness)	355.2563	
		Mod-t UCL (Adjusted for skewness)	332.8147	
		Jackknife UCL	320.8542	
		Standard Bootstrap UCL	261.4121	
		Bootstrap-t UCL	7304.664	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	4385.241	
		Percentile Bootstrap UCL	288.24	
		BCA Bootstrap UCL	315.64	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	514.1936	
		97.5% Chebyshev (Mean, Sd) UCL	677.9335	
		99% Chebyshev (Mean, Sd) UCL	999.5688	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci	Variable:	Chromium	T	
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.888142		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	3.6	Data are normal at 5% significance level			
Maximum	16.4				
Mean	9.62	95% UCL (Assuming Normal Distribution)			
Median	10	Student's-t UCL	15.18015		
Standard Deviation	5.831981				
Variance	34.012	Gamma Distribution Test			
Coefficient of Variation	0.606235	A-D Test Statistic	0.448482		
Skewness	0.005201	A-D 5% Critical Value	0.682883		
Gamma Statistics		K-S Test Statistic	0.268241		
k hat	2.860801	K-S 5% Critical Value	0.359566		
k star (bias corrected)	1.277654	Data follow gamma distribution at 5% significance level			
Theta hat	3.362694				
Theta star	7.529426	95% UCLs (Assuming Gamma Distribution)			
nu hat	28.60801	Approximate Gamma UCL	21.40656		
nu star	12.77654	Adjusted Gamma UCL	31.82037		
Approx.Chi Square Value (.05)	5.741713				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	3.862629	Shapiro-Wilk Test Statistic	0.850193		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762		
Minimum of log data	1.280934	Data are lognormal at 5% significance level			
Maximum of log data	2.797281				
Mean of log data	2.079004	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.715566	95% H-UCL	39.13089		
Variance of log data	0.512035	95% Chebyshev (MVUE) UCL	23.08256		
		97.5% Chebyshev (MVUE) UCL	28.85156		
		99% Chebyshev (MVUE) UCL	40.18366		
95% Non-parametric UCLs					
		CLT UCL	13.91001		
		Adj-CLT UCL (Adjusted for skewness)	13.91649		
		Mod-t UCL (Adjusted for skewness)	15.18117		
		Jackknife UCL	15.18015		
		Standard Bootstrap UCL	13.55169		
		Bootstrap-t UCL	15.35229		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	12.02405		
Use Student's-t UCL		Percentile Bootstrap UCL	13.4		
		BCA Bootstrap UCL	12.96		
		95% Chebyshev (Mean, Sd) UCL	20.98862		
		97.5% Chebyshev (Mean, Sd) UCL	25.90784		
		99% Chebyshev (Mean, Sd) UCL	35.57068		

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Cobalt	T
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.744613	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	5.4	Data not normal at 5% significance level		
Maximum	73.8			
Mean	34.86	95% UCL (Assuming Normal Distribution)		
Median	12	Student's-t UCL	68.14395	
Standard Deviation	34.91114			
Variance	1218.788	Gamma Distribution Test		
Coefficient of Variation	1.001467	A-D Test Statistic	0.609758	
Skewness	0.585974	A-D 5% Critical Value	0.690427	
		K-S Test Statistic	0.327656	
Gamma Statistics				
k hat	1.092236	K-S 5% Critical Value	0.363905	
k star (bias corrected)	0.570228	Data follow gamma distribution at 5% significance level		
Theta hat	31.91618			
Theta star	61.13348	95% UCLs (Assuming Gamma Distribution)		
nu hat	10.92236	Approximate Gamma UCL	133.4829	
nu star	5.702277	Adjusted Gamma UCL	268.677	
Approx. Chi Square Value (.05)	1.48919			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	0.739852	Shapiro-Wilk Test Statistic	0.845926	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics				
Minimum of log data	1.686399	Data are lognormal at 5% significance level		
Maximum of log data	4.301359			
Mean of log data	3.028173	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.192792	95% H-UCL	1295.698	
Variance of log data	1.422753	95% Chebyshev (MVUE) UCL	111.0058	
		97.5% Chebyshev (MVUE) UCL	143.9494	
		99% Chebyshev (MVUE) UCL	208.6605	
		95% Non-parametric UCLs		
		CLT UCL	60.54067	
		Adj-CLT UCL (Adjusted for skewness)	64.91239	
		Mod-t UCL (Adjusted for skewness)	68.82585	
		Jackknife UCL	68.14395	
		Standard Bootstrap UCL	58.19234	
		Bootstrap-t UCL	317.7934	
		Hall's Bootstrap UCL	635.5384	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	60.58	
		BCA Bootstrap UCL	60.58	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	102.9143	
		97.5% Chebyshev (Mean, Sd) UCL	132.3615	
		99% Chebyshev (Mean, Sd) UCL	190.2048	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Copper	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.610442		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	4690	Data not normal at 5% significance level			
Maximum	114000				
Mean	29258	95% UCL (Assuming Normal Distribution)			
Median	9510	Student's-t UCL	74510.96		
Standard Deviation	47465.29				
Variance	2.3E+009	Gamma Distribution Test			
Coefficient of Variation	1.622301	A-D Test Statistic	0.792039		
Skewness	2.214291	A-D 5% Critical Value	0.69892		
		K-S Test Statistic	0.396716		
Gamma Statistics					
k hat	0.73682	K-S 5% Critical Value	0.366931		
k star (bias corrected)	0.428061	Data do not follow gamma distribution at 5% significance level			
Theta hat	39708.49				
Theta star	68350.03	95% UCLs (Assuming Gamma Distribution)			
nu hat	7.368198	Approximate Gamma UCL	149941.9		
nu star	4.280613	Adjusted Gamma UCL	351314.2		
Approx. Chi Square Value (.05)	0.835271				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	0.356496	Shapiro-Wilk Test Statistic	0.81345		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics					
Minimum of log data	8.453188	Data are lognormal at 5% significance level			
Maximum of log data	11.64395				
Mean of log data	9.469489	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	1.27301	95% H-UCL	1417461		
Variance of log data	1.620555	95% Chebyshev (MVUE) UCL	77328.47		
		97.5% Chebyshev (MVUE) UCL	100671		
		99% Chebyshev (MVUE) UCL	146522.8		
95% Non-parametric UCLs					
		CLT UCL	64173.51		
		Adj-CLT UCL (Adjusted for skewness)	86634.1		
		Mod-t UCL (Adjusted for skewness)	78014.36		
		Jackknife UCL	74510.96		
		Standard Bootstrap UCL	59182.2		
		Bootstrap-t UCL	536670.2		
RECOMMENDATION					
Data are lognormal (0.05)		Hall's Bootstrap UCL	495962.3		
		Percentile Bootstrap UCL	70516		
		BCA Bootstrap UCL	71778		
Use 95% Chebyshev (MVUE) UCL		95% Chebyshev (Mean, Sd) UCL	121784.9		
		97.5% Chebyshev (Mean, Sd) UCL	161821.3		
		99% Chebyshev (Mean, Sd) UCL	240465.2		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Iron	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.746128		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	5.2	Data not normal at 5% significance level			
Maximum	327				
Mean	94.72	95% UCL (Assuming Normal Distribution)			
Median	29.2	Student's-t UCL	222.6277		
Standard Deviation	134.1608				
Variance	17999.13	Gamma Distribution Test			
Coefficient of Variation	1.416394	A-D Test Statistic	0.281413		
Skewness	1.915224	A-D 5% Critical Value	0.701814		
		K-S Test Statistic	0.248452		
		K-S 5% Critical Value	0.368058		
Gamma Statistics					
k hat	0.679889	Data follow gamma distribution			
k star (bias corrected)	0.405289	at 5% significance level			
Theta hat	139.3168				
Theta star	233.7097	95% UCLs (Assuming Gamma Distribution)			
nu hat	6.798893	Approximate Gamma UCL	517.0881		
nu star	4.052891	Adjusted Gamma UCL	1246.871		
Approx.Chi Square Value (.05)	0.742407				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	0.307883	Shapiro-Wilk Test Statistic	0.989306		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics					
Minimum of log data	1.648659	Data are lognormal at 5% significance level			
Maximum of log data	5.78996				
Mean of log data	3.658395	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	1.576477	95% H-UCL	48283.72		
Variance of log data	2.485281	95% Chebyshev (MVUE) UCL	345.3889		
		97.5% Chebyshev (MVUE) UCL	454.8169		
		99% Chebyshev (MVUE) UCL	669.7671		
		95% Non-parametric UCLs			
		CLT UCL	193.4088		
		Adj-CLT UCL (Adjusted for skewness)	248.3194		
		Mod-t UCL (Adjusted for skewness)	231.1926		
		Jackknife UCL	222.6277		
		Standard Bootstrap UCL	181.6126		
		Bootstrap-t UCL	1097.795		
RECOMMENDATION					
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	831.3993		
		Percentile Bootstrap UCL	201.04		
		BCA Bootstrap UCL	215.88		
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	356.2476		
		97.5% Chebyshev (Mean, Sd) UCL	469.4108		
		99% Chebyshev (Mean, Sd) UCL	691.6981		
Recommended UCL exceeds the maximum observation					

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Lead	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.913472	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	1060	Data are normal at 5% significance level		
Maximum	2640			
Mean	1776	95% UCL (Assuming Normal Distribution)		
Median	1970	Student's-t UCL	2406.846	
Standard Deviation	661.6872			
Variance	437830	Gamma Distribution Test		
Coefficient of Variation	0.372572	A-D Test Statistic	0.393178	
Skewness	0.103608	A-D 5% Critical Value	0.679415	
		K-S Test Statistic	0.26336	
		K-S 5% Critical Value	0.3578	
Gamma Statistics				
k hat	8.539111	Data follow gamma distribution		
k star (bias corrected)	3.548978	at 5% significance level		
Theta hat	207.9842			
Theta star	500.4258	95% UCLs (Assuming Gamma Distribution)		
nu hat	85.39111	Approximate Gamma UCL	2757.681	
nu star	35.48978	Adjusted Gamma UCL	3396.778	
Approx.Chi Square Value (.05)	22.8561			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	18.55577	Shapiro-Wilk Test Statistic	0.894701	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	6.966024			
Maximum of log data	7.878534	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.422424	95% H-UCL	3033.026	
Standard Deviation of log data	0.393205	95% Chebyshev (MVUE) UCL	3134.675	
Variance of log data	0.15461	97.5% Chebyshev (MVUE) UCL	3721.402	
		99% Chebyshev (MVUE) UCL	4873.915	
		95% Non-parametric UCLs		
		CLT UCL	2262.738	
		Adj-CLT UCL (Adjusted for skewness)	2277.388	
		Mod-t UCL (Adjusted for skewness)	2409.132	
		Jackknife UCL	2406.846	
		Standard Bootstrap UCL	2213.76	
		Bootstrap-t UCL	2523.115	
		Hall's Bootstrap UCL	2137.128	
RECOMMENDATION		Percentile Bootstrap UCL	2226	
Data are normal (0.05)		BCA Bootstrap UCL	2190	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3065.866	
		97.5% Chebyshev (Mean, Sd) UCL	3623.992	
		99% Chebyshev (Mean, Sd) UCL	4720.322	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch 1			Variable:	Magnesium	T
Raw Statistics				Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic			0.849241	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value			0.762	
Minimum	83.4	Data are normal at 5% significance level				
Maximum	564					
Mean	262.08	95% UCL (Assuming Normal Distribution)				
Median	230	Student's-t UCL			433.6684	
Standard Deviation	179.977					
Variance	32391.73	Gamma Distribution Test				
Coefficient of Variation	0.686726	A-D Test Statistic			0.340925	
Skewness	1.530711	A-D 5% Critical Value			0.68278	
Gamma Statistics			K-S Test Statistic			0.274751
k hat	2.917645	K-S 5% Critical Value			0.359506	
k star (bias corrected)	1.300391	Data follow gamma distribution				
Theta hat	89.82586	at 5% significance level				
Theta star	201.5393	95% UCLs (Assuming Gamma Distribution)				
nu hat	29.17645	Approximate Gamma UCL			578.2005	
nu star	13.00391	Adjusted Gamma UCL			855.4892	
Approx.Chi Square Value (.05)	5.894263					
Adjusted Level of Significance	0.0086	Lognormal Distribution Test				
Adjusted Chi Square Value	3.983763	Shapiro-Wilk Test Statistic			0.948364	
Log-transformed Statistics			Shapiro-Wilk 5% Critical Value			0.762
Minimum of log data	4.423648	Data are lognormal at 5% significance level				
Maximum of log data	6.335054					
Mean of log data	5.387599	95% UCLs (Assuming Lognormal Distribution)				
Standard Deviation of log data	0.681543	95% H-UCL			937.5504	
Variance of log data	0.464501	95% Chebyshev (MVUE) UCL			603.7088	
		97.5% Chebyshev (MVUE) UCL			751.6082	
		99% Chebyshev (MVUE) UCL			1042.128	
95% Non-parametric UCLs						
		CLT UCL			394.4713	
		Adj-CLT UCL (Adjusted for skewness)			453.3449	
		Mod-t UCL (Adjusted for skewness)			442.8515	
		Jackknife UCL			433.6684	
		Standard Bootstrap UCL			381.2506	
		Bootstrap-t UCL			600.8436	
RECOMMENDATION						
Data are normal (0.05)		Hall's Bootstrap UCL			1124.477	
		Percentile Bootstrap UCL			393.28	
		BCA Bootstrap UCL			422.6	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			612.9198	
		97.5% Chebyshev (Mean, Sd) UCL			764.7285	
		99% Chebyshev (Mean, Sd) UCL			1062.927	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Manganese	T
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.859131	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.019	Data are normal at 5% significance level		
Maximum	0.39			
Mean	0.191	95% UCL (Assuming Normal Distribution)		
Median	0.11	Student's-t UCL	0.35057	
Standard Deviation	0.167371			
Variance	0.028013	Gamma Distribution Test		
Coefficient of Variation	0.876287	A-D Test Statistic	0.331348	
Skewness	0.455254	A-D 5% Critical Value	0.689274	
		K-S Test Statistic	0.248906	
		K-S 5% Critical Value	0.363266	
Gamma Statistics				
k hat	1.208725	Data follow gamma distribution		
k star (bias corrected)	0.616823	at 5% significance level		
Theta hat	0.158018			
Theta star	0.309651	95% UCLs (Assuming Gamma Distribution)		
nu hat	12.08725	Approximate Gamma UCL	0.682612	
nu star	6.168232	Adjusted Gamma UCL	1.322132	
Approx. Chi Square Value (.05)	1.725919			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	0.891085	Shapiro-Wilk Test Statistic	0.910348	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-3.963316			
Maximum of log data	-0.941609	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.123086	95% H-UCL	9.663082	
Standard Deviation of log data	1.229881	95% Chebyshev (MVUE) UCL	0.674891	
Variance of log data	1.512608	97.5% Chebyshev (MVUE) UCL	0.876816	
		99% Chebyshev (MVUE) UCL	1.273459	
		95% Non-parametric UCLs		
		CLT UCL	0.314118	
		Adj-CLT UCL (Adjusted for skewness)	0.330402	
		Mod-t UCL (Adjusted for skewness)	0.35311	
		Jackknife UCL	0.35057	
		Standard Bootstrap UCL	0.301137	
		Bootstrap-t UCL	0.679043	
RECOMMENDATION		Hall's Bootstrap UCL	2.367042	
Data are normal (0.05)		Percentile Bootstrap UCL	0.31	
		BCA Bootstrap UCL	0.31	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.517266	
		97.5% Chebyshev (Mean, Sd) UCL	0.658441	
		99% Chebyshev (Mean, Sd) UCL	0.935753	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Mercury	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.878538		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	2.44	Data are normal at 5% significance level			
Maximum	45.8				
Mean	18.283	95% UCL (Assuming Normal Distribution)			
Median	11.3	Student's-t UCL	36.04672		
Standard Deviation	18.63215				
Variance	347.1572	Gamma Distribution Test			
Coefficient of Variation	1.019097	A-D Test Statistic	0.310802		
Skewness	0.917045	A-D 5% Critical Value	0.691225		
		K-S Test Statistic	0.238408		
		K-S 5% Critical Value	0.364346		
Gamma Statistics					
k hat	1.011629	Data follow gamma distribution			
k star (bias corrected)	0.537985	at 5% significance level			
Theta hat	18.07284				
Theta star	33.98423	95% UCLs (Assuming Gamma Distribution)			
nu hat	10.11629	Approximate Gamma UCL	73.88964		
nu star	5.379848	Adjusted Gamma UCL	153.2079		
Approx. Chi Square Value (.05)	1.331171				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	0.642002	Shapiro-Wilk Test Statistic	0.916649		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics					
Minimum of log data	0.891998	Data are lognormal at 5% significance level			
Maximum of log data	3.824284				
Mean of log data	2.336162	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	1.290824	95% H-UCL	1286.024		
Variance of log data	1.666226	95% Chebyshev (MVUE) UCL	63.17011		
		97.5% Chebyshev (MVUE) UCL	82.30541		
		99% Chebyshev (MVUE) UCL	119.893		
95% Non-parametric UCLs					
		CLT UCL	31.98883		
		Adj-CLT UCL (Adjusted for skewness)	35.64027		
		Mod-t UCL (Adjusted for skewness)	36.61627		
		Jackknife UCL	36.04672		
		Standard Bootstrap UCL	30.69193		
		Bootstrap-t UCL	67.16468		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	124.0916		
		Percentile Bootstrap UCL	30.415		
		BCA Bootstrap UCL	30.415		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	54.60376		
		97.5% Chebyshev (Mean, Sd) UCL	70.31978		
		99% Chebyshev (Mean, Sd) UCL	101.1909		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Molybdenum	T	
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.872248		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	6.1	Data are normal at 5% significance level			
Maximum	26.7				
Mean	13.24	95% UCL (Assuming Normal Distribution)			
Median	12.4	Student's-t UCL	21.23786		
Standard Deviation	8.388862				
Variance	70.373	Gamma Distribution Test			
Coefficient of Variation	0.6336	A-D Test Statistic	0.330773		
Skewness	1.239721	A-D 5% Critical Value	0.682058		
		K-S Test Statistic	0.243149		
Gamma Statistics		K-S 5% Critical Value	0.359021		
k hat	3.411824	Data follow gamma distribution			
k star (bias corrected)	1.498063	at 5% significance level			
Theta hat	3.880622				
Theta star	8.83808	95% UCLs (Assuming Gamma Distribution)			
nu hat	34.11824	Approximate Gamma UCL	27.36948		
nu star	14.98063	Adjusted Gamma UCL	39.09993		
Approx. Chi Square Value (.05)	7.246887				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	5.072734	Shapiro-Wilk Test Statistic	0.918297		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	1.808289				
Maximum of log data	3.284664	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	2.429594	95% H-UCL	38.42747		
Standard Deviation of log data	0.615794	95% Chebyshev (MVUE) UCL	28.74621		
Variance of log data	0.379203	97.5% Chebyshev (MVUE) UCL	35.48786		
		99% Chebyshev (MVUE) UCL	48.73054		
		95% Non-parametric UCLs			
		CLT UCL	19.41085		
		Adj-CLT UCL (Adjusted for skewness)	21.63333		
		Mod-t UCL (Adjusted for skewness)	21.58452		
		Jackknife UCL	21.23786		
		Standard Bootstrap UCL	18.77283		
		Bootstrap-t UCL	25.21133		
RECOMMENDATION		Hall's Bootstrap UCL	46.84823		
Data are normal (0.05)		Percentile Bootstrap UCL	19		
		BCA Bootstrap UCL	20.16		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	29.5929		
		97.5% Chebyshev (Mean, Sd) UCL	36.66882		
		99% Chebyshev (Mean, Sd) UCL	50.56808		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:			Nickel	T
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.928412	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value		0.762	
Minimum	380	Data are normal at 5% significance level			
Maximum	1040				
Mean	654	95% UCL (Assuming Normal Distribution)			
Median	689	Student's-t UCL		907.4181	
Standard Deviation	265.8073				
Variance	70653.5	Gamma Distribution Test			
Coefficient of Variation	0.406433	A-D Test Statistic		0.302698	
Skewness	0.575392	A-D 5% Critical Value		0.679764	
		K-S Test Statistic		0.232815	
		K-S 5% Critical Value		0.357938	
Gamma Statistics		Data follow gamma distribution			
k hat	7.583862	at 5% significance level			
k star (bias corrected)	3.166878				
Theta hat	86.23575	95% UCLs (Assuming Gamma Distribution)			
Theta star	206.5125	Approximate Gamma UCL		1045.634	
nu hat	75.83862	Adjusted Gamma UCL		1307.021	
nu star	31.66878				
Approx. Chi Square Value (.05)	19.80749	Lognormal Distribution Test			
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic		0.934932	
Adjusted Chi Square Value	15.84625	Shapiro-Wilk 5% Critical Value		0.762	
		Data are lognormal at 5% significance level			
Log-transformed Statistics					
Minimum of log data	5.940171	95% UCLs (Assuming Lognormal Distribution)			
Maximum of log data	6.946976	95% H-UCL		1159.998	
Mean of log data	6.415731	95% Chebyshev (MVUE) UCL		1177.692	
Standard Deviation of log data	0.413141	97.5% Chebyshev (MVUE) UCL		1404.254	
Variance of log data	0.170685	99% Chebyshev (MVUE) UCL		1849.293	
		95% Non-parametric UCLs			
		CLT UCL		849.5281	
		Adj-CLT UCL (Adjusted for skewness)		882.2125	
		Mod-t UCL (Adjusted for skewness)		912.5162	
		Jackknife UCL		907.4181	
		Standard Bootstrap UCL		829.3734	
		Bootstrap-t UCL		977.9058	
		Hall's Bootstrap UCL		854.216	
RECOMMENDATION		Percentile Bootstrap UCL		846.6	
Data are normal (0.05)		BCA Bootstrap UCL		846.6	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		1172.154	
		97.5% Chebyshev (Mean, Sd) UCL		1396.359	
		99% Chebyshev (Mean, Sd) UCL		1836.768	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Potassium T	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.955156	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.59	Data are normal at 5% significance level		
Maximum	1.5			
Mean	1.094	95% UCL (Assuming Normal Distribution)		
Median	1.1	Student's-t UCL	1.450191	
Standard Deviation	0.373604			
Variance	0.13958	Gamma Distribution Test		
Coefficient of Variation	0.341503	A-D Test Statistic	0.261084	
Skewness	-0.337568	A-D 5% Critical Value	0.679059	
		K-S Test Statistic	0.215751	
		K-S 5% Critical Value	0.35766	
k hat	9.512136	Data follow gamma distribution		
k star (bias corrected)	3.938188	at 5% significance level		
Theta hat	0.115011			
Theta star	0.277793	95% UCLs (Assuming Gamma Distribution)		
nu hat	95.12136	Approximate Gamma UCL	1.656839	
nu star	39.38188	Adjusted Gamma UCL	2.015563	
Approx.Chi Square Value (.05)	26.0036			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	21.37556	Shapiro-Wilk Test Statistic	0.932589	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.527633			
Maximum of log data	0.405465	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.036356	95% H-UCL	1.822327	
Standard Deviation of log data	0.379087	95% Chebyshev (MVUE) UCL	1.904946	
Variance of log data	0.143707	97.5% Chebyshev (MVUE) UCL	2.254203	
		99% Chebyshev (MVUE) UCL	2.94025	
		95% Non-parametric UCLs		
		CLT UCL	1.368823	
		Adj-CLT UCL (Adjusted for skewness)	1.341872	
		Mod-t UCL (Adjusted for skewness)	1.445987	
		Jackknife UCL	1.450191	
		Standard Bootstrap UCL	1.343963	
		Bootstrap-t UCL	1.447892	
		Hall's Bootstrap UCL	1.377493	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	1.336	
		BCA Bootstrap UCL	1.336	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.822288	
		97.5% Chebyshev (Mean, Sd) UCL	2.137419	
		99% Chebyshev (Mean, Sd) UCL	2.756433	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1\Variable: Selenium T		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.781659
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	0.057	Data are normal at 5% significance level	
Maximum	0.57		
Mean	0.2692	95% UCL (Assuming Normal Distribution)	
Median	0.11	Student's-t UCL	0.5065
Standard Deviation	0.248901		
Variance	0.061952	Gamma Distribution Test	
Coefficient of Variation	0.924595	A-D Test Statistic	0.569785
Skewness	0.612278	A-D 5% Critical Value	0.687806
		K-S Test Statistic	0.326753
		K-S 5% Critical Value	0.362454
Gamma Statistics		Data follow gamma distribution at 5% significance level	
k hat	1.356927		
k star (bias corrected)	0.676104		
Theta hat	0.198389		
Theta star	0.398164	95% UCLs (Assuming Gamma Distribution)	
nu hat	13.56927	Approximate Gamma UCL	0.892279
nu star	6.761041	Adjusted Gamma UCL	1.656499
Approx. Chi Square Value (.05)	2.039803		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	1.098746	Shapiro-Wilk Test Statistic	0.855559
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-2.864704		
Maximum of log data	-0.562119	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.724016	95% H-UCL	4.319944
Standard Deviation of log data	1.041045	95% Chebyshev (MVUE) UCL	0.786342
Variance of log data	1.083774	97.5% Chebyshev (MVUE) UCL	1.010767
		99% Chebyshev (MVUE) UCL	1.451608
		95% Non-parametric UCLs	
		CLT UCL	0.452292
		Adj-CLT UCL (Adjusted for skewness)	0.484859
		Mod-t UCL (Adjusted for skewness)	0.51158
		Jackknife UCL	0.5065
		Standard Bootstrap UCL	0.435506
		Bootstrap-t UCL	2.132838
		Hall's Bootstrap UCL	4.607304
RECOMMENDATION		Percentile Bootstrap UCL	0.4518
Data are normal (0.05)		BCA Bootstrap UCL	0.4434
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.754397
		97.5% Chebyshev (Mean, Sd) UCL	0.964343
		99% Chebyshev (Mean, Sd) UCL	1.376739

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Silver	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.998411		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	73	Data are normal at 5% significance level			
Maximum	251				
Mean	159.8	95% UCL (Assuming Normal Distribution)			
Median	156	Student's-t UCL	223.4898		
Standard Deviation	66.80344				
Variance	4462.7	Gamma Distribution Test			
Coefficient of Variation	0.418044	A-D Test Statistic	0.181924		
Skewness	0.143589	A-D 5% Critical Value	0.680191		
		K-S Test Statistic	0.147086		
		K-S 5% Critical Value	0.358106		
Gamma Statistics					
k hat	6.419216	Data follow gamma distribution			
k star (bias corrected)	2.70102	at 5% significance level			
Theta hat	24.894				
Theta star	59.16284	95% UCLs (Assuming Gamma Distribution)			
nu hat	64.19216	Approximate Gamma UCL	267.1329		
nu star	27.0102	Adjusted Gamma UCL	341.5371		
Approx. Chi Square Value (.05)	16.15761				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	12.63766	Shapiro-Wilk Test Statistic	0.970197		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics					
Minimum of log data	4.290459	Data are lognormal at 5% significance level			
Maximum of log data	5.525453				
Mean of log data	4.994014	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.465669	95% H-UCL	318.5274		
Variance of log data	0.216848	95% Chebyshev (MVUE) UCL	305.442		
		97.5% Chebyshev (MVUE) UCL	368.0723		
		99% Chebyshev (MVUE) UCL	491.0974		
		95% Non-parametric UCLs			
		CLT UCL	208.9407		
		Adj-CLT UCL (Adjusted for skewness)	210.9906		
		Mod-t UCL (Adjusted for skewness)	223.8095		
		Jackknife UCL	223.4898		
		Standard Bootstrap UCL	203.4339		
		Bootstrap-t UCL	227.6598		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	240.59		
		Percentile Bootstrap UCL	203		
		BCA Bootstrap UCL	203		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	290.0239		
		97.5% Chebyshev (Mean, Sd) UCL	346.3719		
		99% Chebyshev (Mean, Sd) UCL	457.0566		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Sodium	T
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	5		Shapiro-Wilk Test Statistic	0.873122
Number of Unique Samples	5		Shapiro-Wilk 5% Critical Value	0.762
Minimum	0.05		Data are normal at 5% significance level	
Maximum	0.18			
Mean	0.1256		95% UCL (Assuming Normal Distribution)	
Median	0.15		Student's-t UCL	0.181002
Standard Deviation	0.05811			
Variance	0.003377		Gamma Distribution Test	
Coefficient of Variation	0.462661		A-D Test Statistic	0.473772
Skewness	-0.587941		A-D 5% Critical Value	0.680898
			K-S Test Statistic	0.307938
			K-S 5% Critical Value	0.35836
Gamma Statistics				
k hat	4.645389		Data follow gamma distribution	
k star (bias corrected)	1.991489		at 5% significance level	
Theta hat	0.027038			
Theta star	0.063068		95% UCLs (Assuming Gamma Distribution)	
nu hat	46.45389		Approximate Gamma UCL	0.231883
nu star	19.91489		Adjusted Gamma UCL	0.312052
Approx.Chi Square Value (.05)	10.78693			
Adjusted Level of Significance	0.0086		Lognormal Distribution Test	
Adjusted Chi Square Value	8.015692		Shapiro-Wilk Test Statistic	0.853308
			Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics			Data are lognormal at 5% significance level	
Minimum of log data	-2.995732			
Maximum of log data	-1.714798		95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-2.186131		95% H-UCL	0.319621
Standard Deviation of log data	0.562548		95% Chebyshev (MVUE) UCL	0.265034
Variance of log data	0.31646		97.5% Chebyshev (MVUE) UCL	0.324681
			99% Chebyshev (MVUE) UCL	0.441846
			95% Non-parametric UCLs	
			CLT UCL	0.168346
			Adj-CLT UCL (Adjusted for skewness)	0.161045
			Mod-t UCL (Adjusted for skewness)	0.179863
			Jackknife UCL	0.181002
			Standard Bootstrap UCL	0.164373
			Bootstrap-t UCL	0.173096
			Hall's Bootstrap UCL	0.150802
RECOMMENDATION	Data are normal (0.05)		Percentile Bootstrap UCL	0.166
			BCA Bootstrap UCL	0.16
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	0.238878
			97.5% Chebyshev (Mean, Sd) UCL	0.287893
			99% Chebyshev (Mean, Sd) UCL	0.384174

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch Variable:	Thallium	T	
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.906599	
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	1.4	Data are normal at 5% significance level		
Maximum	4.5			
Mean	2.94	95% UCL (Assuming Normal Distribution)		
Median	3.5	Student's-t UCL	4.176838	
Standard Deviation	1.297305			
Variance	1.683	Gamma Distribution Test		
Coefficient of Variation	0.44126	A-D Test Statistic	0.431213	
Skewness	-0.188196	A-D 5% Critical Value	0.680484	
		K-S Test Statistic	0.313871	
		K-S 5% Critical Value	0.358221	
Gamma Statistics				
k hat	5.617677	Data follow gamma distribution		
k star (bias corrected)	2.380404	at 5% significance level		
Theta hat	0.523348			
Theta star	1.235084	95% UCLs (Assuming Gamma Distribution)		
nu hat	56.17677	Approximate Gamma UCL	5.109049	
nu star	23.80404	Adjusted Gamma UCL	6.66308	
Approx. Chi Square Value (.05)	13.69803			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	10.50323	Shapiro-Wilk Test Statistic	0.884735	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0.336472			
Maximum of log data	1.504077	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.986772	95% H-UCL	6.311754	
Standard Deviation of log data	0.497792	95% Chebyshev (MVUE) UCL	5.801463	
Variance of log data	0.247797	97.5% Chebyshev (MVUE) UCL	7.032097	
		99% Chebyshev (MVUE) UCL	9.44944	
		95% Non-parametric UCLs		
		CLT UCL	3.894299	
		Adj-CLT UCL (Adjusted for skewness)	3.842124	
		Mod-t UCL (Adjusted for skewness)	4.1687	
		Jackknife UCL	4.176838	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
		Hall's Bootstrap UCL	N/R	
		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	5.468913	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	6.563175	
		99% Chebyshev (Mean, Sd) UCL	8.712642	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Thorium	T
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.917764	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	190	Data are normal at 5% significance level		
Maximum	438			
Mean	297	95% UCL (Assuming Normal Distribution)		
Median	322	Student's-t UCL	393.5423	
Standard Deviation	101.262			
Variance	10254	Gamma Distribution Test		
Coefficient of Variation	0.34095	A-D Test Statistic	0.358508	
Skewness	0.358984	A-D 5% Critical Value	0.678868	
		K-S Test Statistic	0.243852	
		K-S 5% Critical Value	0.357563	
Gamma Statistics				
k hat	10.61835	Data follow gamma distribution		
k star (bias corrected)	4.380673	at 5% significance level		
Theta hat	27.97045			
Theta star	67.79781	95% UCLs (Assuming Gamma Distribution)		
nu hat	106.1835	Approximate Gamma UCL	439.1646	
nu star	43.80673	Adjusted Gamma UCL	527.9474	
Approx.Chi Square Value (.05)	29.62579			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	24.64374	Shapiro-Wilk Test Statistic	0.913515	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics				
Minimum of log data	5.247024	Data are lognormal at 5% significance level		
Maximum of log data	6.082219			
Mean of log data	5.645905	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.34848	95% H-UCL	466.4741	
Variance of log data	0.121438	95% Chebyshev (MVUE) UCL	498.0832	
		97.5% Chebyshev (MVUE) UCL	585.0456	
		99% Chebyshev (MVUE) UCL	755.8664	
		95% Non-parametric UCLs		
		CLT UCL	371.4884	
		Adj-CLT UCL (Adjusted for skewness)	379.2569	
		Mod-t UCL (Adjusted for skewness)	394.754	
		Jackknife UCL	393.5423	
		Standard Bootstrap UCL	363.6667	
		Bootstrap-t UCL	422.5945	
		Hall's Bootstrap UCL	362.8804	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	369.6	
		BCA Bootstrap UCL	369.6	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	494.396	
		97.5% Chebyshev (Mean, Sd) UCL	579.8095	
		99% Chebyshev (Mean, Sd) UCL	747.5876	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Titanium	T
Raw Statistics			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.814562
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	0.59	Data are normal at 5% significance level	
Maximum	1.9		
Mean	0.998	95% UCL (Assuming Normal Distribution)	
Median	0.88	Student's-t UCL	1.506274
Standard Deviation	0.533123		
Variance	0.28422	Gamma Distribution Test	
Coefficient of Variation	0.534191	A-D Test Statistic	0.411079
Skewness	1.678226	A-D 5% Critical Value	0.680581
		K-S Test Statistic	0.240663
		K-S 5% Critical Value	0.358259
Gamma Statistics			
k hat	5.351715	Data follow gamma distribution	
k star (bias corrected)	2.274019	at 5% significance level	
Theta hat	0.186482		
Theta star	0.438871	95% UCLs (Assuming Gamma Distribution)	
nu hat	53.51715	Approximate Gamma UCL	1.760224
nu star	22.74019	Adjusted Gamma UCL	2.31326
Approx.Chi Square Value (.05)	12.89308		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	9.810705	Shapiro-Wilk Test Statistic	0.89833
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.527633		
Maximum of log data	0.641854	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.09833	95% H-UCL	1.983621
Standard Deviation of log data	0.470874	95% Chebyshev (MVUE) UCL	1.889862
Variance of log data	0.221722	97.5% Chebyshev (MVUE) UCL	2.279603
		99% Chebyshev (MVUE) UCL	3.045174
		95% Non-parametric UCLs	
		CLT UCL	1.390166
		Adj-CLT UCL (Adjusted for skewness)	1.581366
		Mod-t UCL (Adjusted for skewness)	1.536098
		Jackknife UCL	1.506274
		Standard Bootstrap UCL	1.343013
		Bootstrap-t UCL	1.989047
		Hall's Bootstrap UCL	2.967942
RECOMMENDATION		Percentile Bootstrap UCL	1.336
Data are normal (0.05)		BCA Bootstrap UCL	1.492
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.037248
		97.5% Chebyshev (Mean, Sd) UCL	2.486931
		99% Chebyshev (Mean, Sd) UCL	3.370247

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Tungsten	T	
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.903657		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	0.48	Data are normal at 5% significance level			
Maximum	1.3				
Mean	0.998	95% UCL (Assuming Normal Distribution)			
Median	1.1	Student's-t UCL	1.306374		
Standard Deviation	0.32345				
Variance	0.10462	Gamma Distribution Test			
Coefficient of Variation	0.324098	A-D Test Statistic	0.468247		
Skewness	-1.266106	A-D 5% Critical Value	0.679192		
Gamma Statistics					
k hat	9.14745	K-S Test Statistic	0.258641		
k star (bias corrected)	3.792313	K-S 5% Critical Value	0.357713		
Theta hat	0.109101	Data follow gamma distribution			
Theta star	0.263164	at 5% significance level			
nu hat	91.4745	95% UCLs (Assuming Gamma Distribution)			
nu star	37.92313	Approximate Gamma UCL	1.524909		
Approx. Chi Square Value (.05)	24.81937	Adjusted Gamma UCL	1.863276		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	20.31223	Shapiro-Wilk Test Statistic	0.82741		
Log-transformed Statistics					
Minimum of log data	-0.733969	Shapiro-Wilk 5% Critical Value	0.762		
Maximum of log data	0.262364	Data are lognormal at 5% significance level			
Mean of log data	-0.057657				
Standard Deviation of log data	0.400669	95% UCLs (Assuming Lognormal Distribution)			
Variance of log data	0.160536	95% H-UCL	1.740312		
		95% Chebyshev (MVUE) UCL	1.787117		
		97.5% Chebyshev (MVUE) UCL	2.12515		
		99% Chebyshev (MVUE) UCL	2.789149		
95% Non-parametric UCLs					
		CLT UCL	1.23593		
		Adj-CLT UCL (Adjusted for skewness)	1.148414		
		Mod-t UCL (Adjusted for skewness)	1.292724		
		Jackknife UCL	1.306374		
		Standard Bootstrap UCL	1.211812		
		Bootstrap-t UCL	1.217334		
		Hall's Bootstrap UCL	1.15506		
RECOMMENDATION					
Data are normal (0.05)		Percentile Bootstrap UCL	1.2		
		BCA Bootstrap UCL	1.144		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.62852		
		97.5% Chebyshev (Mean, Sd) UCL	1.901347		
		99% Chebyshev (Mean, Sd) UCL	2.437262		
Recommended UCL exceeds the maximum observation					

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Uranium	T
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.87949
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	0.0032	Data are normal at 5% significance level	
Maximum	0.0086		
Mean	0.00668	95% UCL (Assuming Normal Distribution)	
Median	0.0076	Student's-t UCL	0.00875
Standard Deviation	0.002171		
Variance	4.71E-006	Gamma Distribution Test	
Coefficient of Variation	0.324957	A-D Test Statistic	0.516572
Skewness	-1.315865	A-D 5% Critical Value	0.679228
		K-S Test Statistic	0.293772
		K-S 5% Critical Value	0.357727
Gamma Statistics			
k hat	9.049893	Data follow gamma distribution	
k star (bias corrected)	3.75329	at 5% significance level	
Theta hat	0.000738		
Theta star	0.00178	95% UCLs (Assuming Gamma Distribution)	
nu hat	90.49893	Approximate Gamma UCL	0.010232
nu star	37.5329	Adjusted Gamma UCL	0.012518
Approx.Chi Square Value (.05)	24.50348		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	20.02906	Shapiro-Wilk Test Statistic	0.811466
		Shapiro-Wilk 5% Critical Value	0.762
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-5.744604		
Maximum of log data	-4.755993	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-5.064903	95% H-UCL	0.011709
Standard Deviation of log data	0.403218	95% Chebyshev (MVUE) UCL	0.011997
Variance of log data	0.162585	97.5% Chebyshev (MVUE) UCL	0.014274
		99% Chebyshev (MVUE) UCL	0.018747
		95% Non-parametric UCLs	
		CLT UCL	0.008277
		Adj-CLT UCL (Adjusted for skewness)	0.007666
		Mod-t UCL (Adjusted for skewness)	0.008654
		Jackknife UCL	0.00875
		Standard Bootstrap UCL	0.008139
		Bootstrap-t UCL	0.00815
		Hall's Bootstrap UCL	0.007631
		Percentile Bootstrap UCL	0.00804
		BCA Bootstrap UCL	0.00784
RECOMMENDATION			
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	0.010912
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.012742
		99% Chebyshev (Mean, Sd) UCL	0.016339
Recommended UCL exceeds the maximum observation			

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Vanadium	T	
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.799677		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	26.4	Data are normal at 5% significance level			
Maximum	260				
Mean	95.68	95% UCL (Assuming Normal Distribution)			
Median	54.2	Student's-t UCL	189.0127		
Standard Deviation	97.89552				
Variance	9583.532	Gamma Distribution Test			
Coefficient of Variation	1.023155	A-D Test Statistic	0.377201		
Skewness	1.653497	A-D 5% Critical Value	0.687144		
		K-S Test Statistic	0.22807		
Gamma Statistics		K-S 5% Critical Value	0.362087		
k hat	1.423886	Data follow gamma distribution			
k star (bias corrected)	0.702888	at 5% significance level			
Theta hat	67.19639				
Theta star	136.1241	95% UCLs (Assuming Gamma Distribution)			
nu hat	14.23886	Approximate Gamma UCL	307.6766		
nu star	7.028878	Adjusted Gamma UCL	561.5139		
Approx.Chi Square Value (.05)	2.185811				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	1.197696	Shapiro-Wilk Test Statistic	0.911099		
		Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	3.273364				
Maximum of log data	5.560682	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	4.170449	95% H-UCL	1051.478		
Standard Deviation of log data	0.97015	95% Chebyshev (MVUE) UCL	260.3252		
Variance of log data	0.941192	97.5% Chebyshev (MVUE) UCL	332.9964		
		99% Chebyshev (MVUE) UCL	475.7447		
		95% Non-parametric UCLs			
		CLT UCL	167.692		
		Adj-CLT UCL (Adjusted for skewness)	202.2841		
		Mod-t UCL (Adjusted for skewness)	194.4083		
		Jackknife UCL	189.0127		
		Standard Bootstrap UCL	161.5046		
		Bootstrap-t UCL	473.8803		
RECOMMENDATION		Hall's Bootstrap UCL	661.9504		
Data are normal (0.05)		Percentile Bootstrap UCL	170		
		BCA Bootstrap UCL	188.84		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	286.5135		
		97.5% Chebyshev (Mean, Sd) UCL	369.0873		
		99% Chebyshev (Mean, Sd) UCL	531.2875		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Zinc	T	
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.670099	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.72	Data not normal at 5% significance level		
Maximum	4			
Mean	1.582	95% UCL (Assuming Normal Distribution)		
Median	1	Student's-t UCL	2.880929	
Standard Deviation	1.362432			
Variance	1.85622	Gamma Distribution Test		
Coefficient of Variation	0.861208	A-D Test Statistic	0.766023	
Skewness	2.147861	A-D 5% Critical Value	0.683531	
		K-S Test Statistic	0.379888	
		K-S 5% Critical Value	0.35994	
Gamma Statistics				
k hat	2.505063	Data do not follow gamma distribution		
k star (bias corrected)	1.135359	at 5% significance level		
Theta hat	0.631521			
Theta star	1.393392	95% UCLs (Assuming Gamma Distribution)		
nu hat	25.05063	Approximate Gamma UCL	3.739267	
nu star	11.35359	Adjusted Gamma UCL	5.744565	
Approx.Chi Square Value (.05)	4.803448			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	3.126673	Shapiro-Wilk Test Statistic	0.799094	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.328504			
Maximum of log data	1.386294	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.246012	95% H-UCL	5.123905	
Standard Deviation of log data	0.663411	95% Chebyshev (MVUE) UCL	3.447648	
Variance of log data	0.440115	97.5% Chebyshev (MVUE) UCL	4.282751	
		99% Chebyshev (MVUE) UCL	5.923149	
		95% Non-parametric UCLs		
		CLT UCL	2.584206	
		Adj-CLT UCL (Adjusted for skewness)	3.209568	
		Mod-t UCL (Adjusted for skewness)	2.978473	
		Jackknife UCL	2.880929	
		Standard Bootstrap UCL	2.468266	
		Bootstrap-t UCL	8.688298	
		Hall's Bootstrap UCL	9.88181	
		Percentile Bootstrap UCL	2.688	
		BCA Bootstrap UCL	2.838	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	4.237868	
Data are lognormal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	5.387065	
Use H-UCL		99% Chebyshev (Mean, Sd) UCL	7.644438	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch	Variable:	Zirconium T	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.552116	
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0	Data not normal at 5% significance level		
Maximum	1.56E-154			
Mean	3.13E-155	95% UCL (Assuming Normal Distribution)		
Median	0	Student's-t UCL	9.79E-155	
Standard Deviation	6.99E-155			
Variance	4.89E-309			
Coefficient of Variation	2.236068			
Skewness	0			
Gamma Statistics Not Available				
Lognormal Statistics Not Available				
95% Non-parametric UCLs				
	CLT UCL	8.27E-155		
	Adj-CLT UCL (Adjusted for skewness)	8.27E-155		
	Mod-t UCL (Adjusted for skewness)	9.79E-155		
	Jackknife UCL	9.79E-155		
	Standard Bootstrap UCL	N/R		
	Bootstrap-t UCL	N/R		
	Hall's Bootstrap UCL	N/A		
	Percentile Bootstrap UCL	N/R		
	BCA Bootstrap UCL	N/R		
RECOMMENDATION				
Data are Non-parametric (0.05)				
Use 95% Chebyshev (Mean, Sd) UCL	95% Chebyshev (Mean, Sd) UCL	1.68E-154		
	97.5% Chebyshev (Mean, Sd) UCL	2.26E-154		
	99% Chebyshev (Mean, Sd) UCL	3.42E-154		
Recommended UCL exceeds the maximum observation				

Table 9
Summary Statistics
Maynard Pond Surface Water, Metals

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL	
Total Metals (UG/L)																	
Barium	5 / 5	100%	:	3.6 - 4	3.78	0.15	0.040	0.552	Normal	3.921411	Student's-t UCL	4.10	4.40	4.00	4.23	4	
Calcium	5 / 5	100%	:	902 - 925	917.2	9.26	0.010	-1.485	Normal	926.0259	Student's-t UCL	937	956	925	945	925	
Lead	5 / 5	100%	:	3.7 - 4.7	3.98	0.41	0.103	2.070	Non-parametric	4.397813	Modified-t UCL	4.70	*	4.70		4.7	
Magnesium	5 / 5	100%	:	186 - 216	206	12.41	0.060	-1.381	Normal	217.8313	Student's-t UCL	232	258	216	243	216	
Mercury	1 / 5	20%	0.037	0.037	0.04 - 0.04	0.0228	0.0096	0.421	2.236	Non-parametric	0.032684	Modified-t UCL	0.04	*	0.04	0.04	
Potassium	5 / 5	100%	:	1320 - 1420	1364	35.78	0.026	0.821	Normal	1398.11	Student's-t UCL	1440	1514	1420	1471	1420	
Sodium	5 / 5	100%	:	2640 - 2900	2766	121.16	0.044	0.370	Normal	2881.514	Student's-t UCL	3024	3275	2900	3129	2900	
Zinc	5 / 5	100%	:	26 - 27.9	26.64	0.75	0.028	1.617	Normal	27.35536	Student's-t UCL	28.2	29.8	27.9	28.9	27.9	
Dissolved Metals (UG/L)																	
Arsenic	3 / 5	60%	0.96	0.96	1.5 - 1.5	1.092	0.56	0.513	-0.609	Non-parametric	2.181062	95% Chebyshev (Mean, Sd) UCL	1.50	*	1.50		1.5
Barium	5 / 5	100%	:	3.2 - 3.4	3.28	0.083	0.025	0.512	Normal	3.359766	Student's-t UCL	3.46	3.63	3.40	3.53	3.4	
Chromium	3 / 5	60%	0.14	0.14	0.18 - 0.51	0.24	0.19	0.792	0.713	Normal	0.421809	Student's-t UCL	0.65	1.05	0.51	0.81	0.51
Lead	4 / 5	80%	2	2	2.2 - 2.3	2	0.56	0.280	-2.192	Non-parametric	2.494084	Modified-t UCL	2.30	*	2.30		2.3
Magnesium	3 / 5	60%	152	154	165 - 178	133	51.8	0.389	-0.571	Non-parametric	181.3937	Modified-t UCL	178	*	178		178
Manganese	5 / 5	100%	:	17.2 - 18	17.56	0.32	0.018	0.299	Normal	17.86598	Student's-t UCL	18.2	18.9	18.0	18.5	18	
Potassium	5 / 5	100%	:	1240 - 1290	1262	17.89	0.014	0.821	Normal	1279.055	Student's-t UCL	1300	1337	1290	1316	1290	
Sodium	5 / 5	100%	:	2740 - 3020	2862	100.6	0.035	0.866	Normal	2957.909	Student's-t UCL	3076	3285	3020	3164	3076	
Vanadium	1 / 5	20%	0.63	0.63	0.86 - 0.86	0.424	0.244	0.575	2.236068	Non-parametric	0.674538	Modified-t UCL	0.86	*	0.86	0.86	

Notes: 1. For 5 samples, the non-parametric 95th percentile is the 5th ordered sample, i.e., the same as the maximum.

2. For 5 samples, the non-parametric one-sided 95% UCL on the mean is the 4th ordered sample.

3. The Student-t value for 5-1 = 4 degrees of freedom and 95% level of confidence is 2.132.

4. The factor for a one-sided 95% coverage, 95% tolerance limit is 4.202.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. The mean and standard deviation are computed with NDs replaced with DL/2.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:			Barium	T	SW846 3005/602						
Raw Statistics			Normal Distribution Test									
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.955484								
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value		0.762								
Minimum	3.6	Data are normal at 5% significance level										
Maximum	4											
Mean	3.78	95% UCL (Assuming Normal Distribution)										
Median	3.8	Student's-t UCL										
Standard Deviation	0.148324											
Variance	0.022	Gamma Distribution Test										
Coefficient of Variation	0.039239	A-D Test Statistic		0.271556								
Skewness	0.551618	A-D 5% Critical Value		0.67808								
			K-S Test Statistic		0.235374							
			K-S 5% Critical Value		0.35682							
Gamma Statistics												
k hat	817.9917	Data follow gamma distribution										
k star (bias corrected)	327.33	at 5% significance level										
Theta hat	0.004621											
Theta star	0.011548	95% UCLs (Assuming Gamma Distribution)										
nu hat	8179.917	Approximate Gamma UCL		3.938799								
nu star	3273.3	Adjusted Gamma UCL		4.012509								
Approx.Chi Square Value (.05)	3141.332											
Adjusted Level of Significance	0.0086	Lognormal Distribution Test										
Adjusted Chi Square Value	3083.625	Shapiro-Wilk Test Statistic		0.959567								
			Shapiro-Wilk 5% Critical Value		0.762							
Log-transformed Statistics			Data are lognormal at 5% significance level									
Minimum of log data	1.280934											
Maximum of log data	1.386294	95% UCLs (Assuming Lognormal Distribution)										
Mean of log data	1.329113	95% H-UCL		N/A								
Standard Deviation of log data	0.039026	95% Chebyshev (MVUE) UCL		4.067542								
Variance of log data	0.001523	97.5% Chebyshev (MVUE) UCL		4.191965								
			99% Chebyshev (MVUE) UCL		4.436371							
95% Non-parametric UCLs												
			CLT UCL		3.889107							
			Adj-CLT UCL (Adjusted for skewness)		3.906592							
			Mod-t UCL (Adjusted for skewness)		3.924138							
			Jackknife UCL		3.921411							
			Standard Bootstrap UCL		N/R							
			Bootstrap-t UCL		N/R							
RECOMMENDATION			Hall's Bootstrap UCL		N/R							
Data are normal (0.05)			Percentile Bootstrap UCL		N/R							
			BCA Bootstrap UCL		N/R							
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL		4.069137							
			97.5% Chebyshev (Mean, Sd) UCL		4.194246							
			99% Chebyshev (Mean, Sd) UCL		4.44							

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Calcium	T	SW846 3005/60
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.84057
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value		0.762
Minimum	902	Data are normal at 5% significance level		
Maximum	925			
Mean	917.2	95% UCL (Assuming Normal Distribution)		
Median	922	Student's-t UCL		926.0259
Standard Deviation	9.257429			
Variance	85.7	Gamma Distribution Test		
Coefficient of Variation	0.010093	A-D Test Statistic		0.496307
Skewness	-1.484569	A-D 5% Critical Value		0.67808
		K-S Test Statistic		0.319029
		K-S 5% Critical Value		0.35682
Gamma Statistics				
k hat	12196.18	Data follow gamma distribution		
k star (bias corrected)	4878.607	at 5% significance level		
Theta hat	0.075204			
Theta star	0.188004	95% UCLs (Assuming Gamma Distribution)		
nu hat	121961.8	Approximate Gamma UCL		926.9426
nu star	48786.07	Adjusted Gamma UCL		931.3498
Approx. Chi Square Value (.05)	48273.3			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	48044.87	Shapiro-Wilk Test Statistic		0.838874
		Shapiro-Wilk 5% Critical Value		0.762
		Data are lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	6.804615			
Maximum of log data	6.829794	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.821285	95% H-UCL		N/A
Standard Deviation of log data	0.010139	95% Chebyshev (MVUE) UCL		935.3285
Variance of log data	0.000103	97.5% Chebyshev (MVUE) UCL		943.1727
		99% Chebyshev (MVUE) UCL		958.5811
		95% Non-parametric UCLs		
		CLT UCL		924.0098
		Adj-CLT UCL (Adjusted for skewness)		921.0728
		Mod-t UCL (Adjusted for skewness)		925.5678
		Jackknife UCL		926.0259
		Standard Bootstrap UCL		N/R
		Bootstrap-t UCL		N/R
RECOMMENDATION		Hall's Bootstrap UCL		N/R
Data are normal (0.05)		Percentile Bootstrap UCL		N/R
		BCA Bootstrap UCL		N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		935.2461
		97.5% Chebyshev (Mean, Sd) UCL		943.0546
		99% Chebyshev (Mean, Sd) UCL		958.393
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:			Lead	T	SW846	3005/6020
Raw Statistics				Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic				0.710103	
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value				0.762	
Minimum	3.7	Data not normal at 5% significance level					
Maximum	4.7						
Mean	3.98	95% UCL (Assuming Normal Distribution)					
Median	3.8	Student's-t UCL				4.369609	
Standard Deviation	0.408656						
Variance	0.167	Gamma Distribution Test					
Coefficient of Variation	0.102677	A-D Test Statistic				0.829945	
Skewness	2.070463	A-D 5% Critical Value				0.67808	
		K-S Test Statistic				0.379095	
		K-S 5% Critical Value				0.35682	
Gamma Statistics							
k hat	128.1413	Data do not follow gamma distribution					
k star (bias corrected)	51.38987	at 5% significance level					
Theta hat	0.031059						
Theta star	0.077447	95% UCLs (Assuming Gamma Distribution)					
nu hat	1281.413	Approximate Gamma UCL				4.424062	
nu star	513.8987	Adjusted Gamma UCL				4.641749	
Approx. Chi Square Value (.05)	462.3165						
Adjusted Level of Significance	0.0086	Lognormal Distribution Test					
Adjusted Chi Square Value	440.635	Shapiro-Wilk Test Statistic				0.726534	
		Shapiro-Wilk 5% Critical Value				0.762	
		Data not lognormal at 5% significance level					
Log-transformed Statistics							
Minimum of log data	1.308333						
Maximum of log data	1.547563	95% UCLs (Assuming Lognormal Distribution)					
Mean of log data	1.377375	95% H-UCL				N/A	
Standard Deviation of log data	0.096942	95% Chebyshev (MVUE) UCL				4.731168	
Variance of log data	0.009398	97.5% Chebyshev (MVUE) UCL				5.056458	
		99% Chebyshev (MVUE) UCL				5.695427	
		95% Non-parametric UCLs					
		CLT UCL				4.280608	
		Adj-CLT UCL (Adjusted for skewness)				4.461424	
		Mod-t UCL (Adjusted for skewness)				4.397813	
		Jackknife UCL				4.369609	
		Standard Bootstrap UCL				N/R	
		Bootstrap-t UCL				N/R	
RECOMMENDATION				Hall's Bootstrap UCL		N/R	
Data are Non-parametric (0.05)				Percentile Bootstrap UCL		N/R	
				BCA Bootstrap UCL		N/R	
Use Student's-t UCL				95% Chebyshev (Mean, Sd) UCL		4.776618	
or Modified-t UCL				97.5% Chebyshev (Mean, Sd) UCL		5.121315	
				99% Chebyshev (Mean, Sd) UCL		5.798406	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Magnesium	T	SW846 3005
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.846385	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	186	Data are normal at 5% significance level		
Maximum	216			
Mean	206	95% UCL (Assuming Normal Distribution)		
Median	212	Student's-t UCL	217.8313	
Standard Deviation	12.40967			
Variance	154	Gamma Distribution Test		
Coefficient of Variation	0.060241	A-D Test Statistic	0.501412	
Skewness	-1.381411	A-D 5% Critical Value	0.67808	
		K-S Test Statistic	0.306835	
		K-S 5% Critical Value	0.35682	
Gamma Statistics				
k hat	332.3583	Data follow gamma distribution		
k star (bias corrected)	133.0766	at 5% significance level		
Theta hat	0.619813			
Theta star	1.54798	95% UCLs (Assuming Gamma Distribution)		
nu hat	3323.583	Approximate Gamma UCL	219.8304	
nu star	1330.766	Adjusted Gamma UCL	226.3805	
Approx. Chi Square Value (.05)	1247.043			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	1210.961	Shapiro-Wilk Test Statistic	0.837621	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	5.225747			
Maximum of log data	5.375278	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	5.326371	95% H-UCL	N/A	
Standard Deviation of log data	0.0619	95% Chebyshev (MVUE) UCL	230.8601	
Variance of log data	0.003832	97.5% Chebyshev (MVUE) UCL	241.6147	
		99% Chebyshev (MVUE) UCL	262.74	
		95% Non-parametric UCLs		
		CLT UCL	215.1286	
		Adj-CLT UCL (Adjusted for skewness)	211.4651	
		Mod-t UCL (Adjusted for skewness)	217.2598	
		Jackknife UCL	217.8313	
		Standard Bootstrap UCL	214.1955	
		Bootstrap-t UCL	214.2731	
RECOMMENDATION		Hall's Bootstrap UCL	211.185	
Data are normal (0.05)		Percentile Bootstrap UCL	214	
		BCA Bootstrap UCL	212	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	230.1909	
		97.5% Chebyshev (Mean, Sd) UCL	240.6583	
		99% Chebyshev (Mean, Sd) UCL	261.2196	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Mercury	T	SW846 7470A
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.552116	
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value		0.762	
Minimum	0.0185	Data not normal at 5% significance level			
Maximum	0.04				
Mean	0.0228	95% UCL (Assuming Normal Distribution)			
Median	0.0185	Student's-t UCL		0.031967	
Standard Deviation	0.009615				
Variance	9.25E-005	Gamma Distribution Test			
Coefficient of Variation	0.421715	A-D Test Statistic		1.33497	
Skewness	2.236068	A-D 5% Critical Value		0.679139	
Gamma Statistics		K-S Test Statistic		0.492952	
k hat	9.292954	K-S 5% Critical Value		0.357692	
k star (bias corrected)	3.850515	Data do not follow gamma distribution			
Theta hat	0.002453	at 5% significance level			
Theta star	0.005921	95% UCLs (Assuming Gamma Distribution)			
nu hat	92.92954	Approximate Gamma UCL		0.034712	
nu star	38.50515	Adjusted Gamma UCL		0.042339	
Approx. Chi Square Value (.05)	25.29123				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	20.73559	Shapiro-Wilk Test Statistic		0.552116	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.762	
Minimum of log data	-3.989985	Data not lognormal at 5% significance level			
Maximum of log data	-3.218876	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-3.835763	95% H-UCL		0.035301	
Standard Deviation of log data	0.34485	95% Chebyshev (MVUE) UCL		0.037777	
Variance of log data	0.118922	97.5% Chebyshev (MVUE) UCL		0.044331	
		99% Chebyshev (MVUE) UCL		0.057207	
95% Non-parametric UCLs					
		CLT UCL		0.029873	
		Adj-CLT UCL (Adjusted for skewness)		0.034467	
		Mod-t UCL (Adjusted for skewness)		0.032684	
		Jackknife UCL		0.031967	
		Standard Bootstrap UCL		N/R	
		Bootstrap-t UCL		N/R	
RECOMMENDATION		Hall's Bootstrap UCL		N/A	
Data are Non-parametric (0.05)		Percentile Bootstrap UCL		N/R	
		BCA Bootstrap UCL		N/R	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		0.041543	
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL		0.049653	
		99% Chebyshev (Mean, Sd) UCL		0.065584	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:		Potassium	T	SW846 3005/
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.862682		
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	1320	Data are normal at 5% significance level			
Maximum	1420				
Mean	1364	95% UCL (Assuming Normal Distribution)			
Median	1360	Student's-t UCL	1398.11		
Standard Deviation	35.77709				
Variance	1280	Gamma Distribution Test			
Coefficient of Variation	0.02623	A-D Test Statistic	0.562664		
Skewness	0.821056	A-D 5% Critical Value	0.67808		
Gamma Statistics		K-S Test Statistic	0.353888		
k hat	1831.548	K-S 5% Critical Value	0.35682		
k star (bias corrected)	732.7526	Data follow gamma distribution			
Theta hat	0.744725	at 5% significance level			
Theta star	1.861474	95% UCLs (Assuming Gamma Distribution)			
nu hat	18315.48	Approximate Gamma UCL	1401.885		
nu star	7327.526	Adjusted Gamma UCL	1419.268		
Approx.Chi Square Value (.05)	7129.504				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	7042.186	Shapiro-Wilk Test Statistic	0.866099		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762		
Minimum of log data	7.185387	Data are lognormal at 5% significance level			
Maximum of log data	7.258412	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	7.217904	95% H-UCL	N/A		
Standard Deviation of log data	0.026075	95% Chebyshev (MVUE) UCL	1433.328		
Variance of log data	0.00068	97.5% Chebyshev (MVUE) UCL	1463.326		
		99% Chebyshev (MVUE) UCL	1522.253		
95% Non-parametric UCLs					
		CLT UCL	1390.318		
		Adj-CLT UCL (Adjusted for skewness)	1396.595		
		Mod-t UCL (Adjusted for skewness)	1399.089		
		Jackknife UCL	1398.11		
		Standard Bootstrap UCL	N/R		
		Bootstrap-t UCL	N/R		
		Hall's Bootstrap UCL	N/R		
		Percentile Bootstrap UCL	N/R		
		BCA Bootstrap UCL	N/R		
RECOMMENDATION					
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	1433.742		
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1463.92		
		99% Chebyshev (Mean, Sd) UCL	1523.198		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Sodium	T	SW846 3005/601
Raw Statistics					
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.850449		
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	2640	Data are normal at 5% significance level			
Maximum	2900				
Mean	2766	95% UCL (Assuming Normal Distribution)			
Median	2720	Student's-t UCL	2881.514		
Standard Deviation	121.161				
Variance	14680	Gamma Distribution Test			
Coefficient of Variation	0.043804	A-D Test Statistic	0.493197		
Skewness	0.369888	A-D 5% Critical Value	0.67808		
Gamma Statistics					
k hat	655.2454	K-S Test Statistic	0.273649		
k star (bias corrected)	262.2315	K-S 5% Critical Value	0.35682		
Theta hat	4.221319	Data follow gamma distribution			
Theta star	10.54793	at 5% significance level			
nu hat	6552.454	95% UCLs (Assuming Gamma Distribution)			
nu star	2622.315	Approximate Gamma UCL	2896.327		
Approx.Chi Square Value (.05)	2504.317	Adjusted Gamma UCL	2957.072		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	2452.873	Shapiro-Wilk Test Statistic	0.854199		
Log-transformed Statistics					
Minimum of log data	7.878534	Shapiro-Wilk 5% Critical Value	0.762		
Maximum of log data	7.972466	Data are lognormal at 5% significance level			
Mean of log data	7.924394	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.043621	95% H-UCL	N/A		
Variance of log data	0.001903	95% Chebyshev (MVUE) UCL	3001.177		
		97.5% Chebyshev (MVUE) UCL	3102.941		
		99% Chebyshev (MVUE) UCL	3302.836		
95% Non-parametric UCLs					
		CLT UCL	2855.126		
		Adj-CLT UCL (Adjusted for skewness)	2864.704		
		Mod-t UCL (Adjusted for skewness)	2883.008		
		Jackknife UCL	2881.514		
		Standard Bootstrap UCL	2846.79		
		Bootstrap-t UCL	3048.39		
		Hall's Bootstrap UCL	3173.835		
RECOMMENDATION					
Data are normal (0.05)		Percentile Bootstrap UCL	2852		
		BCA Bootstrap UCL	2848		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3002.186		
		97.5% Chebyshev (Mean, Sd) UCL	3104.384		
		99% Chebyshev (Mean, Sd) UCL	3305.133		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Zinc	T	SW846 3005/6020
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.849808
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value		0.762
Minimum	26	Data are normal at 5% significance level		
Maximum	27.9			
Mean	26.64	95% UCL (Assuming Normal Distribution)		
Median	26.4	Student's-t UCL		27.35536
Standard Deviation	0.750333			
Variance	0.563	Gamma Distribution Test		
Coefficient of Variation	0.028166	A-D Test Statistic		0.471399
Skewness	1.617043	A-D 5% Critical Value		0.67808
Gamma Statistics		K-S Test Statistic		0.260788
k hat	1603.743	K-S 5% Critical Value		0.35682
k star (bias corrected)	641.6306	Data follow gamma distribution		
Theta hat	0.016611	at 5% significance level		
Theta star	0.041519	95% UCLs (Assuming Gamma Distribution)		
nu hat	16037.43	Approximate Gamma UCL		27.43191
nu star	6416.306	Adjusted Gamma UCL		27.79583
Approx.Chi Square Value (.05)	6231.079	Lognormal Distribution Test		
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic		0.855976
Adjusted Chi Square Value	6149.497	Shapiro-Wilk 5% Critical Value		0.762
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.258097			
Maximum of log data	3.328627	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.282102	95% H-UCL		N/A
Standard Deviation of log data	0.027797	95% Chebyshev (MVUE) UCL		28.08344
Variance of log data	0.000773	97.5% Chebyshev (MVUE) UCL		28.70804
		99% Chebyshev (MVUE) UCL		29.93496
95% Non-parametric UCLs				
		CLT UCL		27.19195
		Adj-CLT UCL (Adjusted for skewness)		27.45124
		Mod-t UCL (Adjusted for skewness)		27.3958
		Jackknife UCL		27.35536
		Standard Bootstrap UCL		27.12858
		Bootstrap-t UCL		28.43364
RECOMMENDATION		Hall's Bootstrap UCL		29.9571
Data are normal (0.05)		Percentile Bootstrap UCL		27.18
		BCA Bootstrap UCL		27.36
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		28.10267
		97.5% Chebyshev (Mean, Sd) UCL		28.73557
		99% Chebyshev (Mean, Sd) UCL		29.97877

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac\Variable:		Arsenic	D	SW846 3005/60
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.683879		
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	0.48	Data not normal at 5% significance level			
Maximum	1.5				
Mean	1.092	95% UCL (Assuming Normal Distribution)			
Median	1.5	Student's-t UCL	1.624637		
Standard Deviation	0.558677				
Variance	0.31212	Gamma Distribution Test			
Coefficient of Variation	0.511609	A-D Test Statistic	0.947445		
Skewness	-0.608581	A-D 5% Critical Value	0.681555		
Gamma Statistics		K-S Test Statistic	0.393597		
k hat	3.773396	K-S 5% Critical Value	0.35867		
k star (bias corrected)	1.642692	Data do not follow gamma distribution			
Theta hat	0.289394	at 5% significance level			
Theta star	0.664763	95% UCLs (Assuming Gamma Distribution)			
nu hat	37.73396	Approximate Gamma UCL	2.170926		
nu star	16.42692	Adjusted Gamma UCL	3.037516		
Approx.Chi Square Value (.05)	8.262922				
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	5.905548	Shapiro-Wilk Test Statistic	0.683879		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762		
Minimum of log data	-0.733969	Data not lognormal at 5% significance level			
Maximum of log data	0.405465	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-0.050309	95% H-UCL	3.311269		
Standard Deviation of log data	0.624094	95% Chebyshev (MVUE) UCL	2.434084		
Variance of log data	0.389493	97.5% Chebyshev (MVUE) UCL	3.00832		
		99% Chebyshev (MVUE) UCL	4.136296		
		95% Non-parametric UCLs			
		CLT UCL	1.502963		
		Adj-CLT UCL (Adjusted for skewness)	1.430304		
		Mod-t UCL (Adjusted for skewness)	1.613304		
		Jackknife UCL	1.624637		
		Standard Bootstrap UCL	N/R		
		Bootstrap-t UCL	N/R		
		Hall's Bootstrap UCL	N/A		
		Percentile Bootstrap UCL	N/R		
		BCA Bootstrap UCL	N/R		
		95% Chebyshev (Mean, Sd) UCL	2.181062		
		97.5% Chebyshev (Mean, Sd) UCL	2.6523		
		99% Chebyshev (Mean, Sd) UCL	3.577956		
Recommended UCL exceeds the maximum observation					

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Barium D SW846 3005/602		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.880882
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762
Minimum	3.2	Data are normal at 5% significance level	
Maximum	3.4		
Mean	3.28	95% UCL (Assuming Normal Distribution)	
Median	3.3	Student's-t UCL	3.359766
Standard Deviation	0.083666		
Variance	0.007	Gamma Distribution Test	
Coefficient of Variation	0.025508	A-D Test Statistic	0.427102
Skewness	0.512241	A-D 5% Critical Value	0.67808
		K-S Test Statistic	0.258725
		K-S 5% Critical Value	0.35682
Gamma Statistics			
k hat	1930.484	Data follow gamma distribution	
k star (bias corrected)	772.327	at 5% significance level	
Theta hat	0.001699		
Theta star	0.004247	95% UCLs (Assuming Gamma Distribution)	
nu hat	19304.84	Approximate Gamma UCL	3.368687
nu star	7723.27	Adjusted Gamma UCL	3.409354
Approx.Chi Square Value (.05)	7519.94		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	7430.242	Shapiro-Wilk Test Statistic	0.881087
		Shapiro-Wilk 5% Critical Value	0.762
		Data are lognormal at 5% significance level	
Minimum of log data	1.163151		
Maximum of log data	1.223775	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.187584	95% H-UCL	N/A
Standard Deviation of log data	0.025417	95% Chebyshev (MVUE) UCL	3.442509
Variance of log data	0.000646	97.5% Chebyshev (MVUE) UCL	3.512828
		99% Chebyshev (MVUE) UCL	3.650956
		95% Non-parametric UCLs	
		CLT UCL	3.341545
		Adj-CLT UCL (Adjusted for skewness)	3.350703
		Mod-t UCL (Adjusted for skewness)	3.361195
		Jackknife UCL	3.359766
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
		Hall's Bootstrap UCL	N/R
		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
RECOMMENDATION			
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	3.443095
		97.5% Chebyshev (Mean, Sd) UCL	3.513666
		99% Chebyshev (Mean, Sd) UCL	3.65229

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Chromium	D	SW846 3005/
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.883337	
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.07	Data are normal at 5% significance level		
Maximum	0.51			
Mean	0.238	95% UCL (Assuming Normal Distribution)		
Median	0.18	Student's-t UCL	0.421809	
Standard Deviation	0.192795			
Variance	0.03717	Gamma Distribution Test		
Coefficient of Variation	0.810064	A-D Test Statistic	0.377116	
Skewness	0.712902	A-D 5% Critical Value	0.68538	
		K-S Test Statistic	0.259734	
		K-S 5% Critical Value	0.361045	
Gamma Statistics				
k hat	1.760263	Data follow gamma distribution		
k star (bias corrected)	0.837439	at 5% significance level		
Theta hat	0.135207			
Theta star	0.2842	95% UCLs (Assuming Gamma Distribution)		
nu hat	17.60263	Approximate Gamma UCL	0.674947	
nu star	8.374385	Adjusted Gamma UCL	1.147496	
Approx.Chi Square Value (.05)	2.952979			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	1.736916	Shapiro-Wilk Test Statistic	0.87946	
		Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-2.65926			
Maximum of log data	-0.673345	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-1.745663	95% H-UCL	2.111546	
Standard Deviation of log data	0.914376	95% Chebyshev (MVUE) UCL	0.652689	
Variance of log data	0.836083	97.5% Chebyshev (MVUE) UCL	0.831356	
		99% Chebyshev (MVUE) UCL	1.182311	
		95% Non-parametric UCLs		
		CLT UCL	0.37982	
		Adj-CLT UCL (Adjusted for skewness)	0.409193	
		Mod-t UCL (Adjusted for skewness)	0.426391	
		Jackknife UCL	0.421809	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
RECOMMENDATION		Hall's Bootstrap UCL	N/R	
Data are normal (0.05)		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.613827	
		97.5% Chebyshev (Mean, Sd) UCL	0.776448	
		99% Chebyshev (Mean, Sd) UCL	1.095885	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:		Lead	D	SW846 3005/6020
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.625984		
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	1	Data not normal at 5% significance level			
Maximum	2.3				
Mean	2	95% UCL (Assuming Normal Distribution)			
Median	2.2	Student's-t UCL	2.535089		
Standard Deviation	0.561249				
Variance	0.315	Gamma Distribution Test			
Coefficient of Variation	0.280624	A-D Test Statistic	1.141277		
Skewness	-2.191825	A-D 5% Critical Value	0.678854		
Gamma Statistics		K-S Test Statistic	0.464538		
k hat	11.37475	K-S 5% Critical Value	0.357531		
k star (bias corrected)	4.683233	Data do not follow gamma distribution			
Theta hat	0.175828	at 5% significance level			
Theta star	0.427055	95% UCLs (Assuming Gamma Distribution)			
nu hat	113.7475	Approximate Gamma UCL	2.915547		
nu star	46.83233	Adjusted Gamma UCL	3.480435		
Approx.Chi Square Value (.05)	32.12593	Lognormal Distribution Test			
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic	0.603343		
Adjusted Chi Square Value	26.91177	Shapiro-Wilk 5% Critical Value	0.762		
Log-transformed Statistics		Data not lognormal at 5% significance level			
Minimum of log data	0				
Maximum of log data	0.832909	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	0.648547	95% H-UCL	3.249159		
Standard Deviation of log data	0.363229	95% Chebyshev (MVUE) UCL	3.43602		
Variance of log data	0.131935	97.5% Chebyshev (MVUE) UCL	4.050683		
		99% Chebyshev (MVUE) UCL	5.258069		
95% Non-parametric UCLs					
		CLT UCL	2.412855		
		Adj-CLT UCL (Adjusted for skewness)	2.149966		
		Mod-t UCL (Adjusted for skewness)	2.494084		
		Jackknife UCL	2.535089		
		Standard Bootstrap UCL	N/R		
		Bootstrap-t UCL	N/R		
RECOMMENDATION		Hall's Bootstrap UCL	N/R		
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R		
		BCA Bootstrap UCL	N/R		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3.094075		
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	3.567482		
		99% Chebyshev (Mean, Sd) UCL	4.497399		
Recommended UCL exceeds the maximum observation					

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Magnesium	D	SW846 3003
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic		0.754705
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value		0.762
Minimum	76	Data not normal at 5% significance level		
Maximum	178			
Mean	133	95% UCL (Assuming Normal Distribution)		
Median	165	Student's-t UCL		182.3788
Standard Deviation	51.79286			
Variance	2682.5	Gamma Distribution Test		
Coefficient of Variation	0.38942	A-D Test Statistic		0.79158
Skewness	-0.570593	A-D 5% Critical Value		0.679936
Gamma Statistics				
k hat	7.115113	K-S Test Statistic		0.364106
k star (bias corrected)	2.979379	K-S 5% Critical Value		0.358005
Theta hat	18.69261	Data do not follow gamma distribution		
Theta star	44.64018	at 5% significance level		
nu hat	71.15113	95% UCLs (Assuming Gamma Distribution)		
nu star	29.79379	Approximate Gamma UCL		216.1941
Approx.Chi Square Value (.05)	18.32878	Adjusted Gamma UCL		272.5076
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	14.54115	Shapiro-Wilk Test Statistic		0.736256
Log-transformed Statistics				
Minimum of log data	4.330733	Shapiro-Wilk 5% Critical Value		0.762
Maximum of log data	5.181784	Data not lognormal at 5% significance level		
Mean of log data	4.818433	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.440119	95% H-UCL		250.5239
Variance of log data	0.193705	95% Chebyshev (MVUE) UCL		247.4544
		97.5% Chebyshev (MVUE) UCL		296.7141
		99% Chebyshev (MVUE) UCL		393.4752
95% Non-parametric UCLs				
		CLT UCL		171.0989
		Adj-CLT UCL (Adjusted for skewness)		164.7834
		Mod-t UCL (Adjusted for skewness)		181.3937
		Jackknife UCL		182.3788
		Standard Bootstrap UCL		166.5812
		Bootstrap-t UCL		180.5735
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL		149.8139
		Percentile Bootstrap UCL		169.2
		BCA Bootstrap UCL		168.4
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		233.9629
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL		277.6496
		99% Chebyshev (Mean, Sd) UCL		363.4637
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Manganese	D	SW846 300
Raw Statistics				
Number of Valid Samples	5	Normal Distribution Test		
Number of Unique Samples	5	Shapiro-Wilk Test Statistic	0.957853	
Minimum	17.2	Shapiro-Wilk 5% Critical Value	0.762	
Maximum	18	Data are normal at 5% significance level		
Mean	17.56	95% UCL (Assuming Normal Distribution)		
Median	17.6	Student's-t UCL	17.86598	
Standard Deviation	0.320936			
Variance	0.103	Gamma Distribution Test		
Coefficient of Variation	0.018277	A-D Test Statistic	0.25316	
Skewness	0.299488	A-D 5% Critical Value	0.67808	
Gamma Statistics				
k hat	3749.663	K-S Test Statistic		0.222816
k star (bias corrected)	1499.999	K-S 5% Critical Value	0.35682	
Theta hat	0.004683	Data follow gamma distribution		
Theta star	0.011707	at 5% significance level		
nu hat	37496.63	95% UCLs (Assuming Gamma Distribution)		
nu star	14999.99	Approximate Gamma UCL	17.89866	
Approx.Chi Square Value (.05)	14716.17	Adjusted Gamma UCL	18.05297	
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	14590.39	Shapiro-Wilk Test Statistic	0.958274	
Log-transformed Statistics				
Minimum of log data	2.844909	Shapiro-Wilk 5% Critical Value	0.762	
Maximum of log data	2.890372	Data are lognormal at 5% significance level		
Mean of log data	2.86549	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.01825	95% H-UCL	N/A	
Variance of log data	0.000333	95% Chebyshev (MVUE) UCL	18.18469	
		97.5% Chebyshev (MVUE) UCL	18.455	
		99% Chebyshev (MVUE) UCL	18.98597	
95% Non-parametric UCLs				
		CLT UCL	17.79608	
		Adj-CLT UCL (Adjusted for skewness)	17.81662	
		Mod-t UCL (Adjusted for skewness)	17.86918	
		Jackknife UCL	17.86598	
		Standard Bootstrap UCL	17.77032	
		Bootstrap-t UCL	17.90049	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	17.76341	
Use Student's-t UCL		Percentile Bootstrap UCL	17.78	
		BCA Bootstrap UCL	17.78	
		95% Chebyshev (Mean, Sd) UCL	18.18562	
		97.5% Chebyshev (Mean, Sd) UCL	18.45633	
		99% Chebyshev (Mean, Sd) UCL	18.98808	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Potassium	D	SW846 3005
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.862682	
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	1240	Data are normal at 5% significance level		
Maximum	1290			
Mean	1262	95% UCL (Assuming Normal Distribution)		
Median	1260	Student's-t UCL	1279.055	
Standard Deviation	17.88854			
Variance	320	Gamma Distribution Test		
Coefficient of Variation	0.014175	A-D Test Statistic	0.738828	
Skewness	0.821056	A-D 5% Critical Value	0.67808	
Gamma Statistics				
k hat	6249.234	Data do not follow gamma distribution		
k star (bias corrected)	2499.827	at 5% significance level		
Theta hat	0.201945			
Theta star	0.504835	95% UCLs (Assuming Gamma Distribution)		
nu hat	62492.34	Approximate Gamma UCL	1280.789	
nu star	24998.27	Adjusted Gamma UCL	1289.319	
Approx.Chi Square Value (.05)	24631.54	Lognormal Distribution Test		
Adjusted Level of Significance	0.0086	Shapiro-Wilk Test Statistic	0.864564	
Adjusted Chi Square Value	24468.59	Shapiro-Wilk 5% Critical Value	0.762	
Log-transformed Statistics				
Minimum of log data	7.122867	Data are lognormal at 5% significance level		
Maximum of log data	7.162397			
Mean of log data	7.140373	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.014128	95% H-UCL	N/A	
Variance of log data	0.0002	95% Chebyshev (MVUE) UCL	1296.755	
		97.5% Chebyshev (MVUE) UCL	1311.793	
		99% Chebyshev (MVUE) UCL	1341.333	
95% Non-parametric UCLs				
		CLT UCL	1275.159	
		Adj-CLT UCL (Adjusted for skewness)	1278.298	
		Mod-t UCL (Adjusted for skewness)	1279.544	
		Jackknife UCL	1279.055	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
		Hall's Bootstrap UCL	N/R	
		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	1296.871	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1311.96	
		99% Chebyshev (Mean, Sd) UCL	1341.599	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Sodium	D	SW846 3005/60
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.900399	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	2740	Data are normal at 5% significance level		
Maximum	3020			
Mean	2862	95% UCL (Assuming Normal Distribution)		
Median	2850	Student's-t UCL	2957.909	
Standard Deviation	100.5982			
Variance	10120	Gamma Distribution Test		
Coefficient of Variation	0.03515	A-D Test Statistic	0.430715	
Skewness	0.866064	A-D 5% Critical Value	0.67808	
Gamma Statistics				
k hat	1023.087	K-S Test Statistic	0.305664	
k star (bias corrected)	409.3682	K-S 5% Critical Value	0.35682	
Theta hat	2.797416	Data follow gamma distribution		
Theta star	6.991261	at 5% significance level		
nu hat	10230.87	95% UCLs (Assuming Gamma Distribution)		
nu star	4093.682	Approximate Gamma UCL	2969.14	
Approx.Chi Square Value (.05)	3945.963	Adjusted Gamma UCL	3018.688	
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	3881.196	Shapiro-Wilk Test Statistic	0.905719	
Log-transformed Statistics				
Minimum of log data	7.915713	Shapiro-Wilk 5% Critical Value	0.762	
Maximum of log data	8.013012	Data are lognormal at 5% significance level		
Mean of log data	7.958787	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.034863	95% H-UCL	N/A	
Variance of log data	0.001215	95% Chebyshev (MVUE) UCL	3056.488	
		97.5% Chebyshev (MVUE) UCL	3140.647	
		99% Chebyshev (MVUE) UCL	3305.96	
95% Non-parametric UCLs				
		CLT UCL	2936	
		Adj-CLT UCL (Adjusted for skewness)	2954.619	
		Mod-t UCL (Adjusted for skewness)	2960.814	
		Jackknife UCL	2957.909	
		Standard Bootstrap UCL	2927.912	
		Bootstrap-t UCL	3001.673	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	3434.369	
		Percentile Bootstrap UCL	2930	
		BCA Bootstrap UCL	2932	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3058.102	
		97.5% Chebyshev (Mean, Sd) UCL	3142.956	
		99% Chebyshev (Mean, Sd) UCL	3309.634	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Vanadium	D	SW846 3005/
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.552116	
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	0.315	Data not normal at 5% significance level		
Maximum	0.86			
Mean	0.424	95% UCL (Assuming Normal Distribution)		
Median	0.315	Student's-t UCL	0.656371	
Standard Deviation	0.243731			
Variance	0.059405	Gamma Distribution Test		
Coefficient of Variation	0.574838	A-D Test Statistic	1.336824	
Skewness	2.236068	A-D 5% Critical Value	0.680581	
Gamma Statistics				
k hat	5.353805	K-S Test Statistic	0.493999	
k star (bias corrected)	2.274855	K-S 5% Critical Value	0.358259	
Theta hat	0.079196	Data do not follow gamma distribution		
Theta star	0.186385	at 5% significance level		
nu hat	53.53805	95% UCLs (Assuming Gamma Distribution)		
nu star	22.74855	Approximate Gamma UCL	0.74774	
Approx.Chi Square Value (.05)	12.89939	Adjusted Gamma UCL	0.982607	
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	9.816115	Shapiro-Wilk Test Statistic	0.552116	
Log-transformed Statistics				
Minimum of log data	-1.155183	Shapiro-Wilk 5% Critical Value	0.762	
Maximum of log data	-0.150823	Data not lognormal at 5% significance level		
Mean of log data	-0.954311	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.449163	95% H-UCL	0.797154	
Variance of log data	0.201748	95% Chebyshev (MVUE) UCL	0.77949	
		97.5% Chebyshev (MVUE) UCL	0.93634	
		99% Chebyshev (MVUE) UCL	1.244441	
95% Non-parametric UCLs				
		CLT UCL	0.603289	
		Adj-CLT UCL (Adjusted for skewness)	0.719757	
		Mod-t UCL (Adjusted for skewness)	0.674538	
		Jackknife UCL	0.656371	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	N/A	
		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.89912	
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1.104705	
		99% Chebyshev (Mean, Sd) UCL	1.508536	

Table 10
Summary Statistics
Maynard Pond Sediments by 8270C

Parameter	Frequency of Detection	Percent Detected	Range of NonDects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL
SVOCs (UG/KG)																
Acenaphthene	6 / 10	60%	44 : 176	13.2 - 242	73.74	73.44	0.996	1.675	G/NP	133.404	Approximate Gamma UCL	242	*	242		242
Acenaphthylene	4 / 10	40%	44 : 536	38.2 - 94.7	76.42	73.21	0.958	2.313	G/NP	128.1845	Approximate Gamma UCL	268	*	94.7		94.7
Anthracene	8 / 10	80%	44 : 54.8	33 - 340	123.7	109.3	0.884	1.202	G/NP	220.9936	Approximate Gamma UCL	340	*	340		340
Benz[a]anthracene	8 / 10	80%	44 : 54.8	327 - 4340	981.3	1259.2	1.283	2.465	G/NP	2311.875	Approximate Gamma UCL	4340	*	4340		4340
Benz[a]pyrene	10 / 10	100%	: 90.5	5550	1439.9	1614.3	1.121	2.097	G/NP	2990.497	Approximate Gamma UCL	5550	*	5550		5550
Benz[b]fluoranthene	10 / 10	100%	: 60.1	9000	1644.1	2668.8	1.623	2.816	G/NP	3967.048	Approximate Gamma UCL	9000	*	9000		9000
Benz[ghi]perylene	10 / 10	100%	: 32.3	2820	722	824.2	1.142	2.106	G/NP	1531.85	Approximate Gamma UCL	2820	*	2820		2820
Benz[k]fluoranthene	9 / 10	90%	183 : 183	30.1 - 4100	716.4	1246.7	1.740	2.689	G/NP	1855.379	Approximate Gamma UCL	4100	*	4100		4100
Benzoic Acid	1 / 10	10%	885 : 10700	638 - 638	1398.4	1517.6	1.085		Poisson					2300	638	638
Bis(2-Ethylhexyl)phthalate	7 / 10	70%	274 : 935	41.5 - 627	289.79	234	0.807	0.168	Non-parametric	612.3329	95% Chebyshev (Mean, Sd) UCL	627	*	627		627
Chrysene	10 / 10	100%	: 40.4	5770	1394.6	1688.5	1.211	2.229	G/NP	3160.977	Approximate Gamma UCL	5770	*	5770		5770
Dibenz[a,h]anthracene	2 / 10	20%	44 : 536	54.2 - 163	79.1	80.3	1.015	1.749	G/NP	142.7788	Approximate Gamma UCL	268	*	163		163
Dibenzofuran	1 / 10	10%	440 : 5360	133 - 133	675.5	776	1.149		Poisson					1300	133	133
Fluoranthene	10 / 10	100%	: 94.9	9660	2650	2905.4	1.096	1.742	G/NP	5855.014	Approximate Gamma UCL	9660	*	9660		3660
Fluorene	8 / 10	80%	11.9 : 44	26 - 365	102.1	125	1.224	1.635	G/NP	217.577	Approximate Gamma UCL	365	*	365		365
Indeno[1,2,3-cd]pyrene	10 / 10	100%	: 48.3	2820	760.6	823.3	1.082	1.985	G/NP	1535.9	Approximate Gamma UCL	2820	*	2820		2820
Phenanthrene	10 / 10	100%	: 24.4	1820	661.7	577.7	0.873	0.889	Normal	996.5593	Student's-t UCL	1721	2343	1820	2395	1721
Pyrene	10 / 10	100%	: 64.3	9790	2269.8	2867.9	1.264	2.329	G/NP	5250.044	Approximate Gamma UCL	9790	*	9790		3790

Notes: 1. For 10 samples, the non-parametric 95th percentile is the 10th ordered sample, i.e., the same as the maximum.

2. For 10 samples, the non-parametric one-sided 95% UCL on the mean is the 8th ordered sample.

3. The Student-t value for 10-1 = 9 degrees of freedom and 95% level of confidence is 1.833.

4. The factor for a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

7. The mean and standard deviation are computed with NDs replaced with DL/2.

8. Shaded cell highlights an ordered value that is a 1/2DL value.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Acenaphthene	T
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.790527
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	13.2	Data not normal at 5% significance level	
Maximum	242		
Mean	73.74	95% UCL (Assuming Normal Distribution)	
Median	46.75	Student's-t UCL	116.3112
Standard Deviation	73.43903		
Variance	5393.292	Gamma Distribution Test	
Coefficient of Variation	0.995919	A-D Test Statistic	0.363821
Skewness	1.674614	A-D 5% Critical Value	0.740831
Gamma Statistics		K-S Test Statistic	0.168922
k hat	1.411431	K-S 5% Critical Value	0.271586
k star (bias corrected)	1.054668	Data follow gamma distribution	
Theta hat	52.24485	at 5% significance level	
Theta star	69.91771	95% UCLs (Assuming Gamma Distribution)	
nu hat	28.22862	Approximate Gamma UCL	133.404
nu star	21.09337	Adjusted Gamma UCL	148.7011
Approx.Chi Square Value (.05)	11.65951		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	10.46007	Shapiro-Wilk Test Statistic	0.965795
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.580217		
Maximum of log data	5.488938	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.906213	95% H-UCL	189.5293
Standard Deviation of log data	0.925199	95% Chebyshev (MVUE) UCL	168.3067
Variance of log data	0.855992	97.5% Chebyshev (MVUE) UCL	209.9094
		99% Chebyshev (MVUE) UCL	291.6296
95% Non-parametric UCLs			
		CLT UCL	111.9392
		Adj-CLT UCL (Adjusted for skewness)	125.08
		Mod-t UCL (Adjusted for skewness)	118.3609
		Jackknife UCL	116.3112
		Standard Bootstrap UCL	109.6387
		Bootstrap-t UCL	173.1704
RECOMMENDATION		Hall's Bootstrap UCL	307.4333
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	113.28
		BCA Bootstrap UCL	124.67
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	174.9687
		97.5% Chebyshev (Mean, Sd) UCL	218.7705
		99% Chebyshev (Mean, Sd) UCL	304.8105

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Baci Variable:	Acenaphthylene	T
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.708126
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	22	Data not normal at 5% significance level	
Maximum	268		
Mean	76.415	95% UCL (Assuming Normal Distribution)	
Median	52.7	Student's-t UCL	118.8529
Standard Deviation	73.20905		
Variance	5359.564	Gamma Distribution Test	
Coefficient of Variation	0.958045	A-D Test Statistic	0.536138
Skewness	2.313459	A-D 5% Critical Value	0.736956
Gamma Statistics		K-S Test Statistic	0.209947
k hat	1.811557	K-S 5% Critical Value	0.270304
k star (bias corrected)	1.334757	Data follow gamma distribution	
Theta hat	42.18194	at 5% significance level	
Theta star	57.25013	95% UCLs (Assuming Gamma Distribution)	
nu hat	36.23115	Approximate Gamma UCL	128.1845
nu star	26.69514	Adjusted Gamma UCL	140.8328
Approx.Chi Square Value (.05)	15.91384		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	14.48461	Shapiro-Wilk Test Statistic	0.921489
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	3.091042	Data are lognormal at 5% significance level	
Maximum of log data	5.590987	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.035466	95% H-UCL	152.3163
Standard Deviation of log data	0.775906	95% Chebyshev (MVUE) UCL	155.3609
Variance of log data	0.60203	97.5% Chebyshev (MVUE) UCL	190.6939
		99% Chebyshev (MVUE) UCL	260.0989
95% Non-parametric UCLs			
		CLT UCL	114.4946
		Adj-CLT UCL (Adjusted for skewness)	132.5916
		Mod-t UCL (Adjusted for skewness)	121.6757
		Jackknife UCL	118.8529
		Standard Bootstrap UCL	112.9099
		Bootstrap-t UCL	160.3247
RECOMMENDATION		Hall's Bootstrap UCL	258.0186
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	118.475
		BCA Bootstrap UCL	132.06
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	177.3267
		97.5% Chebyshev (Mean, Sd) UCL	220.9913
		99% Chebyshev (Mean, Sd) UCL	306.7619

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch Variable:	Anthracene	T
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.839302
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	22	Data not normal at 5% significance level	
Maximum	340		
Mean	123.73	95% UCL (Assuming Normal Distribution)	
Median	106.85	Student's-t UCL	187.061
Standard Deviation	109.2515		
Variance	11935.88	Gamma Distribution Test	
Coefficient of Variation	0.882983	A-D Test Statistic	0.333132
Skewness	1.201663	A-D 5% Critical Value	0.739792
		K-S Test Statistic	0.147367
		K-S 5% Critical Value	0.271284
Gamma Statistics			
k hat	1.468908	Data follow gamma distribution	
k star (bias corrected)	1.094902	at 5% significance level	
Theta hat	84.23263		
Theta star	113.0055	95% UCLs (Assuming Gamma Distribution)	
nu hat	29.37816	Approximate Gamma UCL	220.9936
nu star	21.89805	Adjusted Gamma UCL	245.7285
Approx.Chi Square Value (.05)	12.26029		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	11.02618	Shapiro-Wilk Test Statistic	0.938009
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	3.091042		
Maximum of log data	5.828946	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.4406	95% H-UCL	347.5481
Standard Deviation of log data	0.953326	95% Chebyshev (MVUE) UCL	299.0049
Variance of log data	0.90883	97.5% Chebyshev (MVUE) UCL	373.9056
		99% Chebyshev (MVUE) UCL	521.0336
95% Non-parametric UCLs			
		CLT UCL	180.557
		Adj-CLT UCL (Adjusted for skewness)	194.5848
		Mod-t UCL (Adjusted for skewness)	189.2491
		Jackknife UCL	187.061
		Standard Bootstrap UCL	177.6068
		Bootstrap-t UCL	238.9557
RECOMMENDATION		Hall's Bootstrap UCL	527.5412
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	181
		BCA Bootstrap UCL	194.68
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	274.3228
		97.5% Chebyshev (Mean, Sd) UCL	339.4844
		99% Chebyshev (Mean, Sd) UCL	467.4817

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch	Variable:	Benzo_a_anthracene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.69692	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	22	Data not normal at 5% significance level		
Maximum	4340			
Mean	976.34	95% UCL (Assuming Normal Distribution)		
Median	681.5	Student's-t UCL	1708.619	
Standard Deviation	1263.245			
Variance	1595788	Gamma Distribution Test		
Coefficient of Variation	1.293858	A-D Test Statistic	0.337191	
Skewness	2.464676	A-D 5% Critical Value	0.759933	
Gamma Statistics				
k hat	0.712998	K-S Test Statistic	0.15882	
k star (bias corrected)	0.565765	K-S 5% Critical Value	0.276701	
Theta hat	1369.346	Data follow gamma distribution		
Theta star	1725.699	at 5% significance level		
nu hat	14.25995	95% UCLs (Assuming Gamma Distribution)		
nu star	11.3153	Approximate Gamma UCL	2311.875	
Approx.Chi Square Value (.05)	4.778622	Adjusted Gamma UCL	2717.083	
Lognormal Distribution Test				
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.885375	
Adjusted Chi Square Value	4.065971	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.091042	Data are lognormal at 5% significance level		
Maximum of log data	8.37563			
Mean of log data	6.038366	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.670227	95% H-UCL	21962.82	
Variance of log data	2.789659	95% Chebyshev (MVUE) UCL	4480.731	
		97.5% Chebyshev (MVUE) UCL	5852.311	
		99% Chebyshev (MVUE) UCL	8546.515	
95% Non-parametric UCLs				
		CLT UCL	1633.415	
		Adj-CLT UCL (Adjusted for skewness)	1966.096	
		Mod-t UCL (Adjusted for skewness)	1760.511	
		Jackknife UCL	1708.619	
		Standard Bootstrap UCL	1594.333	
		Bootstrap-t UCL	2696.436	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	4381.7	
		Percentile Bootstrap UCL	1687.04	
		BCA Bootstrap UCL	1968.24	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	2717.603	
		97.5% Chebyshev (Mean, Sd) UCL	3471.049	
		99% Chebyshev (Mean, Sd) UCL	4951.048	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_a_pyrene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.772363	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	90.5	Data not normal at 5% significance level		
Maximum	5550			
Mean	1439.85	95% UCL (Assuming Normal Distribution)		
Median	978	Student's-t UCL	2375.602	
Standard Deviation	1614.252			
Variance	2605811	Gamma Distribution Test		
Coefficient of Variation	1.121125	A-D Test Statistic	0.209208	
Skewness	2.09657	A-D 5% Critical Value	0.749544	
		K-S Test Statistic	0.120691	
		K-S 5% Critical Value	0.274077	
Gamma Statistics				
k hat	0.963377	Data follow gamma distribution		
k star (bias corrected)	0.741031	at 5% significance level		
Theta hat	1494.586			
Theta star	1943.037	95% UCLs (Assuming Gamma Distribution)		
nu hat	19.26754	Approximate Gamma UCL	2990.497	
nu star	14.82061	Adjusted Gamma UCL	3424.249	
Approx.Chi Square Value (.05)	7.135756			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.231865	Shapiro-Wilk Test Statistic	0.941029	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	4.50535	Data are lognormal at 5% significance level		
Maximum of log data	8.621553			
Mean of log data	6.670479	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.293607	95% H-UCL	9118.514	
Variance of log data	1.673419	95% Chebyshev (MVUE) UCL	4620.215	
		97.5% Chebyshev (MVUE) UCL	5926.447	
		99% Chebyshev (MVUE) UCL	8492.288	
		95% Non-parametric UCLs		
		CLT UCL	2279.501	
		Adj-CLT UCL (Adjusted for skewness)	2641.128	
		Mod-t UCL (Adjusted for skewness)	2432.008	
		Jackknife UCL	2375.602	
		Standard Bootstrap UCL	2241.828	
		Bootstrap-t UCL	3291.585	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	5838.584	
		Percentile Bootstrap UCL	2290.2	
		BCA Bootstrap UCL	2560.65	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	3664.943	
		97.5% Chebyshev (Mean, Sd) UCL	4627.743	
		99% Chebyshev (Mean, Sd) UCL	6518.976	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_b_fluoranthene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.58558	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	60.1	Data not normal at 5% significance level		
Maximum	9000			
Mean	1644.11	95% UCL (Assuming Normal Distribution)		
Median	733.5	Student's-t UCL	3191.162	
Standard Deviation	2668.798			
Variance	7122481	Gamma Distribution Test		
Coefficient of Variation	1.623248	A-D Test Statistic	0.479456	
Skewness	2.815963	A-D 5% Critical Value	0.762144	
		K-S Test Statistic	0.217444	
		K-S 5% Critical Value	0.277239	
Gamma Statistics				
k hat	0.685391	Data follow gamma distribution		
k star (bias corrected)	0.54644	at 5% significance level		
Theta hat	2398.791			
Theta star	3008.764	95% UCLs (Assuming Gamma Distribution)		
nu hat	13.70782	Approximate Gamma UCL	3967.048	
nu star	10.92881	Adjusted Gamma UCL	4680.011	
Approx. Chi Square Value (.05)	4.529354	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.945482	
Adjusted Chi Square Value	3.839342	Shapiro-Wilk 5% Critical Value	0.842	
		Data are lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	4.09601			
Maximum of log data	9.10498	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.520594	95% H-UCL	15387.45	
Standard Deviation of log data	1.473273	95% Chebyshev (MVUE) UCL	5273.904	
Variance of log data	2.170532	97.5% Chebyshev (MVUE) UCL	6830.45	
		99% Chebyshev (MVUE) UCL	9887.984	
		95% Non-parametric UCLs		
		CLT UCL	3032.281	
		Adj-CLT UCL (Adjusted for skewness)	3835.295	
		Mod-t UCL (Adjusted for skewness)	3316.416	
		Jackknife UCL	3191.162	
		Standard Bootstrap UCL	2968.888	
		Bootstrap-t UCL	6816.096	
		Hall's Bootstrap UCL	7721.971	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	3192.42	
		BCA Bootstrap UCL	4142.7	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	5322.794	
		97.5% Chebyshev (Mean, Sd) UCL	6914.563	
		99% Chebyshev (Mean, Sd) UCL	10041.29	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_ghi_perlyene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.760209	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	32.3	Data not normal at 5% significance level		
Maximum	2820			
Mean	721.96	95% UCL (Assuming Normal Distribution)		
Median	463.5	Student's-t UCL	1199.758	
Standard Deviation	824.2436			
Variance	679377.4	Gamma Distribution Test		
Coefficient of Variation	1.141675	A-D Test Statistic	0.271338	
Skewness	2.105666	A-D 5% Critical Value	0.751259	
Gamma Statistics		K-S Test Statistic	0.160142	
k hat	0.914101	K-S 5% Critical Value	0.274516	
k star (bias corrected)	0.706537	Data follow gamma distribution at 5% significance level		
Theta hat	789.8034			
Theta star	1021.829	95% UCLs (Assuming Gamma Distribution)		
nu hat	18.28202	Approximate Gamma UCL	1531.85	
nu star	14.13075	Adjusted Gamma UCL	1761.439	
Approx.Chi Square Value (.05)	6.659811			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	5.791762	Shapiro-Wilk Test Statistic	0.932033	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	3.475067	Data are lognormal at 5% significance level		
Maximum of log data	7.944492			
Mean of log data	5.943653	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.357112	95% H-UCL	5535.964	
Variance of log data	1.841752	95% Chebyshev (MVUE) UCL	2465.34	
		97.5% Chebyshev (MVUE) UCL	3173.907	
		99% Chebyshev (MVUE) UCL	4565.749	
95% Non-parametric UCLs				
		CLT UCL	1150.689	
		Adj-CLT UCL (Adjusted for skewness)	1336.138	
		Mod-t UCL (Adjusted for skewness)	1228.685	
		Jackknife UCL	1199.758	
		Standard Bootstrap UCL	1140.406	
		Bootstrap-t UCL	1672.21	
		Hall's Bootstrap UCL	2875.575	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	1171.13	
		BCA Bootstrap UCL	1358.73	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	1858.101	
		97.5% Chebyshev (Mean, Sd) UCL	2349.711	
		99% Chebyshev (Mean, Sd) UCL	3315.382	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_k_fluoranthene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.595975	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	30.1	Data not normal at 5% significance level		
Maximum	4100			
Mean	716.44	95% UCL (Assuming Normal Distribution)		
Median	249	Student's-t UCL	1439.141	
Standard Deviation	1246.722			
Variance	1554316	Gamma Distribution Test		
Coefficient of Variation	1.740163	A-D Test Statistic	0.518662	
Skewness	2.689071	A-D 5% Critical Value	0.769388	
		K-S Test Statistic	0.264704	
		K-S 5% Critical Value	0.279001	
Gamma Statistics		Data follow gamma distribution		
k hat	0.594933	at 5% significance level		
k star (bias corrected)	0.48312			
Theta hat	1204.236	95% UCLs (Assuming Gamma Distribution)		
Theta star	1482.944	Approximate Gamma UCL	1855.379	
nu hat	11.89866	Adjusted Gamma UCL	2220.301	
nu star	9.662399			
Approx.Chi Square Value (.05)	3.73106	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.9733	
Adjusted Chi Square Value	3.117833	Shapiro-Wilk 5% Critical Value	0.842	
		Data are lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	3.404525	95% UCLs (Assuming Lognormal Distribution)		
Maximum of log data	8.318742	95% H-UCL	6637.58	
Mean of log data	5.534429	95% Chebyshev (MVUE) UCL	2083.706	
Standard Deviation of log data	1.50923	97.5% Chebyshev (MVUE) UCL	2703.257	
Variance of log data	2.277776	99% Chebyshev (MVUE) UCL	3920.245	
		95% Non-parametric UCLs		
		CLT UCL	1364.92	
		Adj-CLT UCL (Adjusted for skewness)	1723.142	
		Mod-t UCL (Adjusted for skewness)	1495.017	
		Jackknife UCL	1439.141	
		Standard Bootstrap UCL	1340.419	
		Bootstrap-t UCL	3676.399	
		Hall's Bootstrap UCL	3578.687	
RECOMMENDATION		Percentile Bootstrap UCL	1448.31	
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	1684.95	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	2434.928	
		97.5% Chebyshev (Mean, Sd) UCL	3178.519	
		99% Chebyshev (Mean, Sd) UCL	4639.159	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Bis(2-Ethylhexyl)phthalate	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.834695	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	41.5	Data not normal at 5% significance level		
Maximum	627			
Mean	289.79	95% UCL (Assuming Normal Distribution)		
Median	286.5	Student's-t UCL	425.4338	
Standard Deviation	233.9972			
Variance	54754.7	Gamma Distribution Test		
Coefficient of Variation	0.807472	A-D Test Statistic	0.811128	
Skewness	0.167649	A-D 5% Critical Value	0.743476	
		K-S Test Statistic	0.283169	
		K-S 5% Critical Value	0.272355	
Gamma Statistics				
k hat	1.265132	Data do not follow gamma distribution		
k star (bias corrected)	0.952259	at 5% significance level		
Theta hat	229.0591			
Theta star	304.3184	95% UCLs (Assuming Gamma Distribution)		
nu hat	25.30264	Approximate Gamma UCL	543.8107	
nu star	19.04518	Adjusted Gamma UCL	610.4693	
Approx.Chi Square Value (.05)	10.14894			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	9.040755	Shapiro-Wilk Test Statistic	0.841365	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	3.725693			
Maximum of log data	6.440947	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	5.224494	95% H-UCL	1109.633	
Standard Deviation of log data	1.089226	95% Chebyshev (MVUE) UCL	798.5006	
Variance of log data	1.186413	97.5% Chebyshev (MVUE) UCL	1010.091	
		99% Chebyshev (MVUE) UCL	1425.718	
		95% Non-parametric UCLs		
		CLT UCL	411.5033	
		Adj-CLT UCL (Adjusted for skewness)	415.695	
		Mod-t UCL (Adjusted for skewness)	426.0876	
		Jackknife UCL	425.4338	
		Standard Bootstrap UCL	405.6876	
		Bootstrap-t UCL	426.504	
		Hall's Bootstrap UCL	389.8684	
		Percentile Bootstrap UCL	408.64	
		BCA Bootstrap UCL	402.11	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	612.3329	
Data are Non-parametric (0.05)		97.5% Chebyshev (Mean, Sd) UCL	751.8975	
Use 99% Chebyshev (Mean, Sd) UCL		99% Chebyshev (Mean, Sd) UCL	1026.045	
Recommended UCL exceeds the maximum observation				
Consider using 95% or 97.5% Chebyshev (Mean, Sd) UCL				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Chrysene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.745461	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	40.4	Data not normal at 5% significance level		
Maximum	5770			
Mean	1394.65	95% UCL (Assuming Normal Distribution)		
Median	927.5	Student's-t UCL	2373.447	
Standard Deviation	1688.509			
Variance	2851061	Gamma Distribution Test		
Coefficient of Variation	1.210704	A-D Test Statistic	0.220376	
Skewness	2.228681	A-D 5% Critical Value	0.755781	
		K-S Test Statistic	0.126931	
		K-S 5% Critical Value	0.275675	
Gamma Statistics				
k hat	0.784176	Data follow gamma distribution		
k star (bias corrected)	0.61559	at 5% significance level		
Theta hat	1778.491			
Theta star	2265.55	95% UCLs (Assuming Gamma Distribution)		
nu hat	15.68352	Approximate Gamma UCL	3160.977	
nu star	12.3118	Adjusted Gamma UCL	3682.637	
Approx.Chi Square Value (.05)	5.432071			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	4.662597	Shapiro-Wilk Test Statistic	0.928778	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.69883	Data are lognormal at 5% significance level		
Maximum of log data	8.660427			
Mean of log data	6.48156	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.533122	95% H-UCL	18881.97	
Variance of log data	2.350462	95% Chebyshev (MVUE) UCL	5582.855	
		97.5% Chebyshev (MVUE) UCL	7250.661	
		99% Chebyshev (MVUE) UCL	10526.74	
		95% Non-parametric UCLs		
		CLT UCL	2272.925	
		Adj-CLT UCL (Adjusted for skewness)	2675.023	
		Mod-t UCL (Adjusted for skewness)	2436.166	
		Jackknife UCL	2373.447	
		Standard Bootstrap UCL	2203.369	
		Bootstrap-t UCL	3362.118	
		Hall's Bootstrap UCL	5829.534	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	2276.5	
Use Approximate Gamma UCL		BCA Bootstrap UCL	2793.5	
		95% Chebyshev (Mean, Sd) UCL	3722.098	
		97.5% Chebyshev (Mean, Sd) UCL	4729.187	
		99% Chebyshev (Mean, Sd) UCL	6707.418	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Dibenz_a,h_anthracene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.756712	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	22	Data not normal at 5% significance level		
Maximum	268			
Mean	79.095	95% UCL (Assuming Normal Distribution)		
Median	40.8	Student's-t UCL	125.6715	
Standard Deviation	80.34847			
Variance	6455.877	Gamma Distribution Test		
Coefficient of Variation	1.015848	A-D Test Statistic	0.697757	
Skewness	1.749446	A-D 5% Critical Value	0.740658	
		K-S Test Statistic	0.280864	
		K-S 5% Critical Value	0.271535	
Gamma Statistics				
k hat	1.42101	Data follow approximate gamma distribution		
k star (bias corrected)	1.061374	at 5% significance level		
Theta hat	55.66111			
Theta star	74.52135	95% UCLs (Assuming Gamma Distribution)		
nu hat	28.4202	Approximate Gamma UCL	142.7788	
nu star	21.22747	Adjusted Gamma UCL	159.0838	
Approx.Chi Square Value (.05)	11.75936			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	10.55411	Shapiro-Wilk Test Statistic	0.870414	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.091042			
Maximum of log data	5.590987	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.979224	95% H-UCL	191.0075	
Standard Deviation of log data	0.89898	95% Chebyshev (MVUE) UCL	174.4242	
Variance of log data	0.808165	97.5% Chebyshev (MVUE) UCL	216.9808	
		99% Chebyshev (MVUE) UCL	300.5749	
		95% Non-parametric UCLs		
		CLT UCL	120.8881	
		Adj-CLT UCL (Adjusted for skewness)	135.9077	
		Mod-t UCL (Adjusted for skewness)	128.0143	
		Jackknife UCL	125.6715	
		Standard Bootstrap UCL	119.3804	
		Bootstrap-t UCL	173.1199	
		Hall's Bootstrap UCL	310.7072	
RECOMMENDATION				
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	120.955	
		BCA Bootstrap UCL	134.905	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	189.8477	
		97.5% Chebyshev (Mean, Sd) UCL	237.7705	
		99% Chebyshev (Mean, Sd) UCL	331.9056	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Fluoranthene	T	
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.820487		
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	94.9	Data not normal at 5% significance level			
Maximum	9660				
Mean	2649.99	95% UCL (Assuming Normal Distribution)			
Median	1895	Student's-t UCL	4334.18		
Standard Deviation	2905.374				
Variance	8441196	Gamma Distribution Test			
Coefficient of Variation	1.096372	A-D Test Statistic	0.186595		
Skewness	1.742323	A-D 5% Critical Value	0.754158		
		K-S Test Statistic	0.134297		
Gamma Statistics		K-S 5% Critical Value	0.275259		
k hat	0.830793	Data follow gamma distribution			
k star (bias corrected)	0.648222	at 5% significance level			
Theta hat	3189.713				
Theta star	4088.093	95% UCLs (Assuming Gamma Distribution)			
nu hat	16.61585	Approximate Gamma UCL	5855.014		
nu star	12.96443	Adjusted Gamma UCL	6786.75		
Approx.Chi Square Value (.05)	5.867725				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	5.06216	Shapiro-Wilk Test Statistic	0.935147		
		Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	4.552824				
Maximum of log data	9.175749	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	7.171456	95% H-UCL	30421.26		
Standard Deviation of log data	1.480943	95% Chebyshev (MVUE) UCL	10235.68		
Variance of log data	2.193191	97.5% Chebyshev (MVUE) UCL	13261.5		
		99% Chebyshev (MVUE) UCL	19205.16		
		95% Non-parametric UCLs			
		CLT UCL	4161.215		
		Adj-CLT UCL (Adjusted for skewness)	4702.108		
		Mod-t UCL (Adjusted for skewness)	4418.549		
		Jackknife UCL	4334.18		
		Standard Bootstrap UCL	4066.177		
		Bootstrap-t UCL	5671.024		
		Hall's Bootstrap UCL	11249.63		
RECOMMENDATION		Percentile Bootstrap UCL	4144.3		
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	4696.59		
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	6654.771		
		97.5% Chebyshev (Mean, Sd) UCL	8387.643		
		99% Chebyshev (Mean, Sd) UCL	11791.53		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Fluorene	T
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.726145
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	5.95	Data not normal at 5% significance level	
Maximum	365	95% UCL (Assuming Normal Distribution)	
Mean	102.085	Student's-t UCL	174.5565
Median	47.1	Gamma Distribution Test	
Standard Deviation	125.0195	A-D Test Statistic	0.459355
Variance	15629.88	A-D 5% Critical Value	0.751602
Coefficient of Variation	1.224661	K-S Test Statistic	0.183513
Skewness	1.634837	K-S 5% Critical Value	0.274604
Gamma Statistics		Data follow gamma distribution at 5% significance level	
k hat	0.904249	95% UCLs (Assuming Gamma Distribution)	
k star (bias corrected)	0.699641	Approximate Gamma UCL	217.577
Theta hat	112.8947	Adjusted Gamma UCL	250.4085
Theta star	145.9105	Lognormal Distribution Test	
nu hat	18.08499	Shapiro-Wilk Test Statistic	0.964842
nu star	13.99282	Shapiro-Wilk 5% Critical Value	0.842
Approx.Chi Square Value (.05)	6.565296	Data are lognormal at 5% significance level	
Adjusted Level of Significance	0.0267	95% UCLs (Assuming Lognormal Distribution)	
Adjusted Chi Square Value	5.704508	95% H-UCL	506.0288
Log-transformed Statistics		95% Chebyshev (MVUE) UCL	286.3907
Minimum of log data	1.783391	97.5% Chebyshev (MVUE) UCL	366.0277
Maximum of log data	5.899897	99% Chebyshev (MVUE) UCL	522.4592
Mean of log data	3.97967	95% Non-parametric UCLs	
Standard Deviation of log data	1.235015	CLT UCL	167.1137
Variance of log data	1.525263	Adj-CLT UCL (Adjusted for skewness)	188.9527
RECOMMENDATION		Mod-t UCL (Adjusted for skewness)	177.9629
Data follow gamma distribution (0.05)		Jackknife UCL	174.5565
Use Approximate Gamma UCL		Standard Bootstrap UCL	163.3622
		Bootstrap-t UCL	339.6856
		Hall's Bootstrap UCL	531.8365
		Percentile Bootstrap UCL	165.56
		BCA Bootstrap UCL	190.95
		95% Chebyshev (Mean, Sd) UCL	274.4125
		97.5% Chebyshev (Mean, Sd) UCL	348.9787
		99% Chebyshev (Mean, Sd) UCL	495.4497

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Indeno_1,2,3-cd_pyrene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.784749	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	48.3	Data not normal at 5% significance level		
Maximum	2820			
Mean	760.59	95% UCL (Assuming Normal Distribution)		
Median	504	Student's-t UCL	1237.848	
Standard Deviation	823.3105			
Variance	677840.2	Gamma Distribution Test		
Coefficient of Variation	1.082463	A-D Test Statistic	0.208628	
Skewness	1.984959	A-D 5% Critical Value	0.747641	
		K-S Test Statistic	0.123654	
		K-S 5% Critical Value	0.273567	
Gamma Statistics				
k hat	1.034763	Data follow gamma distribution		
k star (bias corrected)	0.791001	at 5% significance level		
Theta hat	735.0379			
Theta star	961.554	95% UCLs (Assuming Gamma Distribution)		
nu hat	20.69526	Approximate Gamma UCL	1535.918	
nu star	15.82002	Adjusted Gamma UCL	1749.007	
Approx.Chi Square Value (.05)	7.834106			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.879643	Shapiro-Wilk Test Statistic	0.956245	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.877432			
Maximum of log data	7.944492	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.078481	95% H-UCL	4048.222	
Standard Deviation of log data	1.229226	95% Chebyshev (MVUE) UCL	2315.378	
Variance of log data	1.510996	97.5% Chebyshev (MVUE) UCL	2958.112	
		99% Chebyshev (MVUE) UCL	4220.641	
		95% Non-parametric UCLs		
		CLT UCL	1188.834	
		Adj-CLT UCL (Adjusted for skewness)	1363.454	
		Mod-t UCL (Adjusted for skewness)	1265.085	
		Jackknife UCL	1237.848	
		Standard Bootstrap UCL	1155.193	
		Bootstrap-t UCL	1654.343	
		Hall's Bootstrap UCL	2930.271	
RECOMMENDATION		Percentile Bootstrap UCL	1213.56	
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	1316	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	1895.445	
		97.5% Chebyshev (Mean, Sd) UCL	2386.498	
		99% Chebyshev (Mean, Sd) UCL	3351.076	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Phenanthrene	T	
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.92219	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	24.4	Data are normal at 5% significance level		
Maximum	1820			
Mean	661.66	95% UCL (Assuming Normal Distribution)		
Median	500	Student's-t UCL	996.5593	
Standard Deviation	577.7302			
Variance	333772.2	Gamma Distribution Test		
Coefficient of Variation	0.873153	A-D Test Statistic	0.20468	
Skewness	0.889207	A-D 5% Critical Value	0.747946	
		K-S Test Statistic	0.117283	
		K-S 5% Critical Value	0.273656	
Gamma Statistics				
k hat	1.017946	Data follow gamma distribution		
k star (bias corrected)	0.779229	at 5% significance level		
Theta hat	649.9951			
Theta star	849.1214	95% UCLs (Assuming Gamma Distribution)		
nu hat	20.35892	Approximate Gamma UCL	1344.648	
nu star	15.58458	Adjusted Gamma UCL	1533.108	
Approx.Chi Square Value (.05)	7.668693			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.726006	Shapiro-Wilk Test Statistic	0.90618	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.194583			
Maximum of log data	7.506592	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	5.928888	95% H-UCL	5769.692	
Standard Deviation of log data	1.372302	95% Chebyshev (MVUE) UCL	2487.675	
Variance of log data	1.883212	97.5% Chebyshev (MVUE) UCL	3205.325	
		99% Chebyshev (MVUE) UCL	4615.01	
		95% Non-parametric UCLs		
		CLT UCL	962.1654	
		Adj-CLT UCL (Adjusted for skewness)	1017.057	
		Mod-t UCL (Adjusted for skewness)	1005.121	
		Jackknife UCL	996.5593	
		Standard Bootstrap UCL	942.6374	
		Bootstrap-t UCL	1108.613	
		Hall's Bootstrap UCL	1043.491	
		Percentile Bootstrap UCL	959.32	
		BCA Bootstrap UCL	992.1	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	1458.006	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1802.586	
		99% Chebyshev (Mean, Sd) UCL	2479.446	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Pyrene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.721644	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	64.3	Data not normal at 5% significance level		
Maximum	9790			
Mean	2269.83	95% UCL (Assuming Normal Distribution)		
Median	1520.5	Student's-t UCL	3932.308	
Standard Deviation	2867.918			
Variance	8224954	Gamma Distribution Test		
Coefficient of Variation	1.263495	A-D Test Statistic	0.250508	
Skewness	2.328668	A-D 5% Critical Value	0.75698	
		K-S Test Statistic	0.136133	
		K-S 5% Critical Value	0.275982	
Gamma Statistics		Data follow gamma distribution		
k hat	0.749878	at 5% significance level		
k star (bias corrected)	0.591582			
Theta hat	3026.931	95% UCLs (Assuming Gamma Distribution)		
Theta star	3836.884	Approximate Gamma UCL	5250.044	
nu hat	14.99757	Adjusted Gamma UCL	6141.298	
nu star	11.83163			
Approx.Chi Square Value (.05)	5.115347	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.929026	
Adjusted Chi Square Value	4.372983	Shapiro-Wilk 5% Critical Value	0.842	
		Data are lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	4.16356	95% UCLs (Assuming Lognormal Distribution)		
Maximum of log data	9.189117	95% H-UCL	33453.22	
Mean of log data	6.929134	95% Chebyshev (MVUE) UCL	9163.529	
Standard Deviation of log data	1.562815	97.5% Chebyshev (MVUE) UCL	11916.55	
Variance of log data	2.442392	99% Chebyshev (MVUE) UCL	17324.32	
		95% Non-parametric UCLs		
		CLT UCL	3761.573	
		Adj-CLT UCL (Adjusted for skewness)	4475.173	
		Mod-t UCL (Adjusted for skewness)	4043.615	
		Jackknife UCL	3932.308	
		Standard Bootstrap UCL	3688.885	
		Bootstrap-t UCL	5739.724	
		Hall's Bootstrap UCL	9760.203	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	3812.1	
		BCA Bootstrap UCL	4469.2	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	6222.982	
		97.5% Chebyshev (Mean, Sd) UCL	7933.514	
		99% Chebyshev (Mean, Sd) UCL	11293.52	

Table 11
Summary Statistics
Maynard Pond Sediments by 8310

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL
SVOCs (UG/KG)																
Anthracene	8 / 10	80%	87.9 : 110	74.6 - 442	215.7	145.3	0.674	0.288	Normal	299.91	Student's-t UCL	482	639	442	652	442
Benzo[a]anthracene	10 / 10	100%	: :	41.5 - 2840	1235.6	949.3	0.768	0.344	Normal	1785.841	Student's-t UCL	2976	3999	2840	4084	2840
Benzo[al]pyrene	10 / 10	100%	: :	46.2 - 2620	1174.1	919.1	0.783	0.379	Normal	1706.892	Student's-t UCL	2859	3849	2620	3931	2620
Benzo[b]fluoranthene	10 / 10	100%	: :	49.6 - 3130	1239.7	978.6	0.789	0.566	Normal	1806.996	Student's-t UCL	3033	4088	3130	4176	3033
Benzo[ghi]perylene	7 / 10	70%	8.79 : 11	511 - 1460	661.2	555.7	0.840	0.150	Normal	983.3543	Student's-t UCL	1680	2279	1460	2328	1460
Benzo[k]fluoranthene	10 / 10	100%	: :	28.7 - 1590	683.1	510.7	0.748	0.247	Normal	979.1617	Student's-t UCL	1619	2170	1590	2215	1590
Chrysene	10 / 10	100%	: :	32 - 1810	850.2	676.1	0.795	0.243	Normal	1242.157	Student's-t UCL	2089	2818	1810	2879	1810
Fluoranthene	10 / 10	100%	: :	75 - 5240	2254	1741	0.772	0.279	Normal	3263.233	Student's-t UCL	5445	7322	5240	7477	5240
Fluorene	1 / 10	10%	87.9 : 268	329 - 329	91.3	89.8	0.984		Poisson			165	329		165	165
Phenanthrene	10 / 10	100%	: :	21.6 - 2060	909.9	687.9	0.756	0.200	Normal	1308.624	Student's-t UCL	2171	2912	2060	2974	2060
Pyrene	9 / 10	90%	11 : 11	79.4 - 4500	2001	1546	0.773	0.193	Normal	2897.626	Student's-t UCL	4835	6502	4500	6639	4500

Notes: 1. For 10 samples, the non-parametric 95th percentile is the 10th ordered sample, i.e., the same as the maximum.

2. For 10 samples, the non-parametric one-sided 95% UCL on the mean is the 8th ordered sample.

3. The Student's-t value for 10-1 = 9 degrees of freedom and 95% level of confidence is 1.833.

4. The factor for a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. The mean and standard deviation are computed with NDs replaced with DL/2.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Anthracene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.92017	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	43.95	Data are normal at 5% significance level		
Maximum	442			
Mean	215.655	95% UCL (Assuming Normal Distribution)		
Median	199	Student's-t UCL	299.91	
Standard Deviation	145.3471			
Variance	21125.77	Gamma Distribution Test		
Coefficient of Variation	0.67398	A-D Test Statistic	0.348414	
Skewness	0.288221	A-D 5% Critical Value	0.735652	
		K-S Test Statistic	0.169172	
		K-S 5% Critical Value	0.269836	
Gamma Statistics				
k hat	1.99019	Data follow gamma distribution		
k star (bias corrected)	1.459799	at 5% significance level		
Theta hat	108.359			
Theta star	147.7292	95% UCLs (Assuming Gamma Distribution)		
nu hat	39.80379	Approximate Gamma UCL	352.5348	
nu star	29.19599	Adjusted Gamma UCL	385.4279	
Approx.Chi Square Value (.05)	17.85997			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	16.33577	Shapiro-Wilk Test Statistic	0.913979	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.783053	Data are lognormal at 5% significance level		
Maximum of log data	6.09131			
Mean of log data	5.101888	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.840416	95% H-UCL	510.5454	
Variance of log data	0.706299	95% Chebyshev (MVUE) UCL	493.5718	
		97.5% Chebyshev (MVUE) UCL	610.2694	
		99% Chebyshev (MVUE) UCL	839.4992	
95% Non-parametric UCLs				
		CLT UCL	291.2571	
		Adj-CLT UCL (Adjusted for skewness)	295.7333	
		Mod-t UCL (Adjusted for skewness)	300.6082	
		Jackknife UCL	299.91	
		Standard Bootstrap UCL	286.5892	
		Bootstrap-t UCL	306.7433	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	291.2053	
		Percentile Bootstrap UCL	290.06	
		BCA Bootstrap UCL	292.66	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	416.0021	
		97.5% Chebyshev (Mean, Sd) UCL	502.6925	
		99% Chebyshev (Mean, Sd) UCL	672.9789	

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_a_anthracene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.950528
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	41.5	Data are normal at 5% significance level		
Maximum	2840			
Mean	1235.55	95% UCL (Assuming Normal Distribution)		
Median	1180	Student's-t UCL		1785.841
Standard Deviation	949.2993			
Variance	901169.1	Gamma Distribution Test		
Coefficient of Variation	0.768321	A-D Test Statistic		0.524825
Skewness	0.344101	A-D 5% Critical Value		0.749167
		K-S Test Statistic		0.213694
		K-S 5% Critical Value		0.27398
Gamma Statistics				
k hat	0.974235	Data follow gamma distribution		
k star (bias corrected)	0.748631	at 5% significance level		
Theta hat	1268.225			
Theta star	1650.412	95% UCLs (Assuming Gamma Distribution)		
nu hat	19.48471	Approximate Gamma UCL		2554.703
nu star	14.97263	Adjusted Gamma UCL		2922.667
Approx.Chi Square Value (.05)	7.241324			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.329641	Shapiro-Wilk Test Statistic		0.810753
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	3.725693	Data not lognormal at 5% significance level		
Maximum of log data	7.951559			
Mean of log data	6.52496	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.503304	95% H-UCL		17446.33
Variance of log data	2.259924	95% Chebyshev (MVUE) UCL		5557.637
		97.5% Chebyshev (MVUE) UCL		7208.125
		99% Chebyshev (MVUE) UCL		10450.19
95% Non-parametric UCLs				
		CLT UCL		1729.326
		Adj-CLT UCL (Adjusted for skewness)		1764.23
		Mod-t UCL (Adjusted for skewness)		1791.285
		Jackknife UCL		1785.841
		Standard Bootstrap UCL		1709.319
		Bootstrap-t UCL		1886.552
		Hall's Bootstrap UCL		1765.187
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL		1702
		BCA Bootstrap UCL		1731.9
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		2544.069
		97.5% Chebyshev (Mean, Sd) UCL		3110.266
		99% Chebyshev (Mean, Sd) UCL		4222.45

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_a_pyrene	T
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.928099	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	46.2	Data are normal at 5% significance level		
Maximum	2620			
Mean	1174.13	95% UCL (Assuming Normal Distribution)		
Median	978	Student's-t UCL	1706.892	
Standard Deviation	919.0607			
Variance	844672.7	Gamma Distribution Test		
Coefficient of Variation	0.782759	A-D Test Statistic	0.500606	
Skewness	0.378675	A-D 5% Critical Value	0.748503	
		K-S Test Statistic	0.228219	
Gamma Statistics		K-S 5% Critical Value	0.27381	
k hat	0.993302	Data follow gamma distribution		
k star (bias corrected)	0.761978	at 5% significance level		
Theta hat	1182.047			
Theta star	1540.897	95% UCLs (Assuming Gamma Distribution)		
nu hat	19.86604	Approximate Gamma UCL	2409.123	
nu star	15.23956	Adjusted Gamma UCL	2751.958	
Approx.Chi Square Value (.05)	7.427278			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.501999	Shapiro-Wilk Test Statistic	0.816642	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	3.83298			
Maximum of log data	7.87093	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.486716	95% H-UCL	14236.82	
Standard Deviation of log data	1.462257	95% Chebyshev (MVUE) UCL	5009.484	
Variance of log data	2.138195	97.5% Chebyshev (MVUE) UCL	6484.536	
		99% Chebyshev (MVUE) UCL	9381.991	
		95% Non-parametric UCLs		
		CLT UCL	1652.178	
		Adj-CLT UCL (Adjusted for skewness)	1689.365	
		Mod-t UCL (Adjusted for skewness)	1712.693	
		Jackknife UCL	1706.892	
		Standard Bootstrap UCL	1624.87	
		Bootstrap-t UCL	1758.908	
		Hall's Bootstrap UCL	1698.122	
		Percentile Bootstrap UCL	1624.42	
		BCA Bootstrap UCL	1679.2	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	2440.968	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	2989.13	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	4065.887	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl\Variable: Benzo_b_fluoranthene T		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.950675
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	49.6	Data are normal at 5% significance level	
Maximum	3130	95% UCL (Assuming Normal Distribution)	
Mean	1239.72	Student's-t UCL	1806.996
Median	1109		
Standard Deviation	978.5994		
Variance	957656.8	Gamma Distribution Test	
Coefficient of Variation	0.789371	A-D Test Statistic	0.46835
Skewness	0.565887	A-D 5% Critical Value	0.74818
Gamma Statistics		K-S Test Statistic	0.215111
k hat	1.004992	K-S 5% Critical Value	0.273724
k star (bias corrected)	0.770161	Data follow gamma distribution	
Theta hat	1233.562	at 5% significance level	
Theta star	1609.69	95% UCLs (Assuming Gamma Distribution)	
nu hat	20.09984	Approximate Gamma UCL	2532.032
nu star	15.40322	Adjusted Gamma UCL	2889.745
Approx.Chi Square Value (.05)	7.541643	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.829656
Adjusted Chi Square Value	6.608084	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	3.903991		
Maximum of log data	8.048788	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.548627	95% H-UCL	14225.21
Standard Deviation of log data	1.446345	95% Chebyshev (MVUE) UCL	5196.256
Variance of log data	2.091915	97.5% Chebyshev (MVUE) UCL	6721.05
		99% Chebyshev (MVUE) UCL	9716.211
95% Non-parametric UCLs			
		CLT UCL	1748.737
		Adj-CLT UCL (Adjusted for skewness)	1807.909
		Mod-t UCL (Adjusted for skewness)	1816.225
		Jackknife UCL	1806.996
		Standard Bootstrap UCL	1730.491
		Bootstrap-t UCL	1873.358
		Hall's Bootstrap UCL	1903.894
RECOMMENDATION		Percentile Bootstrap UCL	1732.7
Data are normal (0.05)		BCA Bootstrap UCL	1774.12
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2588.626
		97.5% Chebyshev (Mean, Sd) UCL	3172.299
		99% Chebyshev (Mean, Sd) UCL	4318.811

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac\Variable: Benzo_ghi_perylene T		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.901129
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	4.395	Data are normal at 5% significance level	
Maximum	1460		
Mean	661.232	95% UCL (Assuming Normal Distribution)	
Median	603	Student's-t UCL	983.3543
Standard Deviation	555.6887		
Variance	308790	Gamma Distribution Test	
Coefficient of Variation	0.840384	A-D Test Statistic	1.153479
Skewness	0.149681	A-D 5% Critical Value	0.77804
		K-S Test Statistic	0.32204
		K-S 5% Critical Value	0.28105
Gamma Statistics			
k hat	0.494266	Data do not follow gamma distribution	
k star (bias corrected)	0.412653	at 5% significance level	
Theta hat	1337.806		
Theta star	1602.393	95% UCLs (Assuming Gamma Distribution)	
nu hat	9.885322	Approximate Gamma UCL	1893.724
nu star	8.253058	Adjusted Gamma UCL	2313.1
Approx.Chi Square Value (.05)	2.881721		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	2.359252	Shapiro-Wilk Test Statistic	0.711412
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	1.480468		
Maximum of log data	7.286192	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.206701	95% H-UCL	1389692
Standard Deviation of log data	2.543298	95% Chebyshev (MVUE) UCL	8897.532
Variance of log data	6.468366	97.5% Chebyshev (MVUE) UCL	11869.29
		99% Chebyshev (MVUE) UCL	17706.72
		95% Non-parametric UCLs	
		CLT UCL	950.2726
		Adj-CLT UCL (Adjusted for skewness)	959.1601
		Mod-t UCL (Adjusted for skewness)	984.7406
		Jackknife UCL	983.3543
		Standard Bootstrap UCL	941.5709
		Bootstrap-t UCL	1011.151
		Hall's Bootstrap UCL	927.9306
RECOMMENDATION		Percentile Bootstrap UCL	936
Data are normal (0.05)		BCA Bootstrap UCL	964.25
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1427.196
		97.5% Chebyshev (Mean, Sd) UCL	1758.629
		99% Chebyshev (Mean, Sd) UCL	2409.666

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_k_fluoranthene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.949796	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	28.7	Data are normal at 5% significance level		
Maximum	1590			
Mean	683.13	95% UCL (Assuming Normal Distribution)		
Median	678.5	Student's-t UCL	979.1617	
Standard Deviation	510.6803			
Variance	260794.3	Gamma Distribution Test		
Coefficient of Variation	0.747559	A-D Test Statistic	0.605778	
Skewness	0.247226	A-D 5% Critical Value	0.748042	
		K-S Test Statistic	0.207396	
		K-S 5% Critical Value	0.273684	
Gamma Statistics				
k hat	1.01261	Data follow gamma distribution		
k star (bias corrected)	0.775493	at 5% significance level		
Theta hat	674.6233			
Theta star	880.8973	95% UCLs (Assuming Gamma Distribution)		
nu hat	20.25219	Approximate Gamma UCL	1391.126	
nu star	15.50987	Adjusted Gamma UCL	1586.738	
Approx.Chi Square Value (.05)	7.616315			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.677382	Shapiro-Wilk Test Statistic	0.796248	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.356897	Data not lognormal at 5% significance level		
Maximum of log data	7.371489			
Mean of log data	5.957492	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	1.462442	95% H-UCL	8392.524	
Variance of log data	2.138736	95% Chebyshev (MVUE) UCL	2951.766	
		97.5% Chebyshev (MVUE) UCL	3820.954	
		99% Chebyshev (MVUE) UCL	5528.304	
		95% Non-parametric UCLs		
		CLT UCL	948.7595	
		Adj-CLT UCL (Adjusted for skewness)	962.2498	
		Mod-t UCL (Adjusted for skewness)	981.2659	
		Jackknife UCL	979.1617	
		Standard Bootstrap UCL	931.0621	
		Bootstrap-t UCL	1013.164	
		Hall's Bootstrap UCL	976.543	
		Percentile Bootstrap UCL	934.06	
		BCA Bootstrap UCL	937.17	
RECOMMENDATION				
Data are normal (0.05)				
Use Student's-t UCL				
		95% Chebyshev (Mean, Sd) UCL	1387.054	
		97.5% Chebyshev (Mean, Sd) UCL	1691.643	
		99% Chebyshev (Mean, Sd) UCL	2289.948	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Chrysene	T	
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.913164		
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	32	Data are normal at 5% significance level			
Maximum	1810	95% UCL (Assuming Normal Distribution)			
Mean	850.22	Student's-t UCL	1242.157		
Median	733.5				
Standard Deviation	676.1251	Gamma Distribution Test			
Variance	457145.2	A-D Test Statistic	0.455186		
Coefficient of Variation	0.795236	A-D 5% Critical Value	0.749656		
Skewness	0.242739	K-S Test Statistic	0.180033		
		K-S 5% Critical Value	0.274105		
Gamma Statistics					
k hat	0.960176	Data follow gamma distribution			
k star (bias corrected)	0.73879	at 5% significance level			
Theta hat	885.4834	95% UCLs (Assuming Gamma Distribution)			
Theta star	1150.828	Approximate Gamma UCL	1768.225		
nu hat	19.20352	Adjusted Gamma UCL	2025.227		
nu star	14.7758				
Approx.Chi Square Value (.05)	7.104682	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.836814		
Adjusted Chi Square Value	6.203096	Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics					
Minimum of log data	3.465736	Data not lognormal at 5% significance level			
Maximum of log data	7.501082	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	6.141433	95% H-UCL	10581.76		
Standard Deviation of log data	1.474459	95% Chebyshev (MVUE) UCL	3616.485		
Variance of log data	2.174028	97.5% Chebyshev (MVUE) UCL	4684.125		
		99% Chebyshev (MVUE) UCL	6781.297		
95% Non-parametric UCLs					
		CLT UCL	1201.905		
		Adj-CLT UCL (Adjusted for skewness)	1219.442		
		Mod-t UCL (Adjusted for skewness)	1244.892		
		Jackknife UCL	1242.157		
		Standard Bootstrap UCL	1184.356		
		Bootstrap-t UCL	1256.788		
		Hall's Bootstrap UCL	1166.021		
		Percentile Bootstrap UCL	1176.52		
		BCA Bootstrap UCL	1210.6		
RECOMMENDATION					
Data are normal (0.05)					
Use Student's-t UCL					
		95% Chebyshev (Mean, Sd) UCL	1782.194		
		97.5% Chebyshev (Mean, Sd) UCL	2185.46		
		99% Chebyshev (Mean, Sd) UCL	2977.598		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Fluoranthene	T	
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.953367	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	75	Data are normal at 5% significance level			
Maximum	5240				
Mean	2254.1	95% UCL (Assuming Normal Distribution)			
Median	2140	Student's-t UCL		3263.233	
Standard Deviation	1740.842				
Variance	3030531	Gamma Distribution Test			
Coefficient of Variation	0.7723	A-D Test Statistic		0.483558	
Skewness	0.279105	A-D 5% Critical Value		0.749321	
		K-S Test Statistic		0.181886	
		K-S 5% Critical Value		0.274019	
Gamma Statistics					
k hat	0.969799	Data follow gamma distribution			
k star (bias corrected)	0.745526	at 5% significance level			
Theta hat	2324.297				
Theta star	3023.504	95% UCLs (Assuming Gamma Distribution)			
nu hat	19.39597	Approximate Gamma UCL		4669.22	
nu star	14.91052	Adjusted Gamma UCL		5343.661	
Approx.Chi Square Value (.05)	7.198161				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	6.289657	Shapiro-Wilk Test Statistic		0.827452	
		Shapiro-Wilk 5% Critical Value		0.842	
Log-transformed Statistics					
Minimum of log data	4.317488	Data not lognormal at 5% significance level			
Maximum of log data	8.564077				
Mean of log data	7.123151	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	1.494145	95% H-UCL		30572.89	
Variance of log data	2.232471	95% Chebyshev (MVUE) UCL		9961.114	
		97.5% Chebyshev (MVUE) UCL		12913.82	
		99% Chebyshev (MVUE) UCL		18713.85	
95% Non-parametric UCLs					
		CLT UCL		3159.596	
		Adj-CLT UCL (Adjusted for skewness)		3211.513	
		Mod-t UCL (Adjusted for skewness)		3271.331	
		Jackknife UCL		3263.233	
		Standard Bootstrap UCL		3136.81	
		Bootstrap-t UCL		3296.736	
RECOMMENDATION					
Data are normal (0.05)					
Use Student's-t UCL					
		95% Chebyshev (Mean, Sd) UCL		4653.685	
		97.5% Chebyshev (Mean, Sd) UCL		5691.987	
		99% Chebyshev (Mean, Sd) UCL		7731.531	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Phenanthrene	T
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.955458
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	21.6	Data are normal at 5% significance level	
Maximum	2060		
Mean	909.86	95% UCL (Assuming Normal Distribution)	
Median	900.5	Student's-t UCL	1308.624
Standard Deviation	687.9016		
Variance	473208.6	Gamma Distribution Test	
Coefficient of Variation	0.756052	A-D Test Statistic	0.453666
Skewness	0.199557	A-D 5% Critical Value	0.748643
		K-S Test Statistic	0.181788
		K-S 5% Critical Value	0.273846
Gamma Statistics			
k hat	0.989287	Data follow gamma distribution	
k star (bias corrected)	0.759168	at 5% significance level	
Theta hat	919.7129		
Theta star	1198.497	95% UCLs (Assuming Gamma Distribution)	
nu hat	19.78574	Approximate Gamma UCL	1869.872
nu star	15.18335	Adjusted Gamma UCL	2136.639
Approx.Chi Square Value (.05)	7.388058		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	6.465633	Shapiro-Wilk Test Statistic	0.835401
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	3.072693		
Maximum of log data	7.630461	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.229084	95% H-UCL	12702.09
Standard Deviation of log data	1.498018	95% Chebyshev (MVUE) UCL	4099.333
Variance of log data	2.244057	97.5% Chebyshev (MVUE) UCL	5315.432
		99% Chebyshev (MVUE) UCL	7704.225
		95% Non-parametric UCLs	
		CLT UCL	1267.671
		Adj-CLT UCL (Adjusted for skewness)	1282.339
		Mod-t UCL (Adjusted for skewness)	1310.912
		Jackknife UCL	1308.624
		Standard Bootstrap UCL	1258.871
		Bootstrap-t UCL	1345.366
		Hall's Bootstrap UCL	1266.935
		Percentile Bootstrap UCL	1231.1
		BCA Bootstrap UCL	1260
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	1858.067
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	2268.357
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	3074.292

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Pyrene	T
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.955726
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	5.5	Data are normal at 5% significance level	
Maximum	4500	95% UCL (Assuming Normal Distribution)	
Mean	2001.49	Student's-t UCL	2897.626
Median	1920		
Standard Deviation	1545.913	Gamma Distribution Test	
Variance	2389846	A-D Test Statistic	0.637959
Coefficient of Variation	0.772381	A-D 5% Critical Value	0.760838
Skewness	0.192632	K-S Test Statistic	0.221461
		K-S 5% Critical Value	0.276921
Gamma Statistics		Data follow gamma distribution at 5% significance level	
k hat	0.701702		
k star (bias corrected)	0.557858		
Theta hat	2852.338	95% UCLs (Assuming Gamma Distribution)	
Theta star	3587.814	Approximate Gamma UCL	4775.312
nu hat	14.03403	Adjusted Gamma UCL	5620.815
nu star	11.15715		
Approx.Chi Square Value (.05)	4.67633	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.761405
Adjusted Chi Square Value	3.9729	Shapiro-Wilk 5% Critical Value	0.842
		Data not lognormal at 5% significance level	
Minimum of log data	1.704748		
Maximum of log data	8.411833	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.740684	95% H-UCL	463695.6
Standard Deviation of log data	2.126987	95% Chebyshev (MVUE) UCL	19630.74
Variance of log data	4.524074	97.5% Chebyshev (MVUE) UCL	25989.29
		99% Chebyshev (MVUE) UCL	38479.44
95% Non-parametric UCLs			
		CLT UCL	2805.594
		Adj-CLT UCL (Adjusted for skewness)	2837.414
		Mod-t UCL (Adjusted for skewness)	2902.59
		Jackknife UCL	2897.626
		Standard Bootstrap UCL	2769.556
		Bootstrap-t UCL	2934.674
		Hall's Bootstrap UCL	2832.852
		Percentile Bootstrap UCL	2749
		BCA Bootstrap UCL	2834.94
RECOMMENDATION			
Data are normal (0.05)			
Use Student's-t UCL			
		95% Chebyshev (Mean, Sd) UCL	4132.383
		97.5% Chebyshev (Mean, Sd) UCL	5054.423
		99% Chebyshev (Mean, Sd) UCL	6865.59

Table 12
Summary Statistics
Maynard Pond Sediments, Metals

Parameter	Frequency of Detection	Percent Detected	Range of NonDects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL
Metals (MG/KG)																
Aluminum	10 / 10	100%		7430 - 23200	12712	4526.9	0.356	1.482	Normal	15336.16	Student's-t UCL	21010	25890	23200	26293	21010
Antimony	1 / 10	10%	0.15 : 0.47	0.66 - 0.66	0.18	0.175	0.972		Poisson				0.28	0.66		0.28
Arsenic	10 / 10	100%		3.7 - 11.8	6.72	3.12	0.464	0.901	G/NP	8.867257	Approximate Gamma UCL	11.8	*	11.8		11.8
Barium	10 / 10	100%		25.8 - 54.7	40.57	9.8	0.242	-0.206	Normal	46.2543	Student's-t UCL	58.5	69.1	54.7	70.0	54.7
Beryllium	10 / 10	100%		0.24 - 0.63	0.4	0.125	0.313	0.486	Normal	0.474649	Student's-t UCL	0.63	0.77	0.63	0.78	0.63
Cadmium	10 / 10	100%		0.16 - 2.9	0.72	0.82	1.139	2.529	G/NP	1.289241	Approximate Gamma UCL	2.9	*	2.9	2.9	2.9
Calcium	10 / 10	100%		638 - 1400	976.7	233.1	0.239	0.244	Normal	1111.804	Student's-t UCL	1404	1655	1400	1676	1400
Chromium	10 / 10	100%		13.7 - 37.5	25.22	7.59	0.301	-0.292	Normal	29.62056	Student's-t UCL	39.1	47.3	37.5	48.0	37.5
Cobalt	10 / 10	100%		1.8 - 5.7	3.84	1.33	0.346	-0.123	Normal	4.612522	Student's-t UCL	6.28	7.72	5.70	7.83	5.7
Copper	3 / 10	30%	16.7 : 29.1	16.9 - 30.8	14.14	6.64	0.470	1.962	G/NP	18.32449	Approximate Gamma UCL	30.8	*	30.8	30.8	30.8
Iron	10 / 10	100%		6610 - 18200	12292	3814.1	0.310	-0.154	Normal	14502.95	Student's-t UCL	19283	23395	18200	23734	18200
Lead	10 / 10	100%		24.8 - 242	136.5	76.4	0.560	-0.064	Normal	180.85	Student's-t UCL	277	359	242	366	242
Magnesium	10 / 10	100%		1230 - 3890	2839	828.4	0.292	-0.964	Normal	3319.226	Student's-t UCL	4357	5251	3890	5324	3890
Manganese	10 / 10	100%		57 - 121	95.44	23.11	0.242	-0.853	Normal	108.8349	Student's-t UCL	138	163	121	165	121
Mercury	10 / 10	100%		0.0074 - 0.35	0.101	0.105	1.040	1.863	G/NP	0.189551	Approximate Gamma UCL	0.35	*	0.35	0.35	0.35
Molybdenum	9 / 10	90%	0.56 : 0.56	0.56 - 1.3	0.855	0.363	0.425	0.048	Normal	1.065347	Student's-t UCL	1.52	1.91	1.30	1.94	1.3
Nickel	10 / 10	100%		7.4 - 21.1	13.64	4.24	0.311	0.209	Normal	16.09531	Student's-t UCL	21.4	26.0	21.1	26.4	21.1
Potassium	9 / 10	90%	657 : 657	1110 - 2330	1475.8	534.8	0.362	-0.773	Normal	1785.85	Student's-t UCL	2456	3033	2330	3080	2330
Silver	3 / 10	30%	0.035 : 0.089	0.027 - 0.17	0.045	0.045	1.000	2.939	Non-parametric	0.106871	95% Chebyshev (Mean, Std) UCL	0.17	*	0.17		0.17
Sodium	10 / 10	100%		57.2 - 393	172.7	123.6	0.716	1.175	G/NP	266.2052	Approximate Gamma UCL	393	*	393		393
Thallium	3 / 10	30%	0.12 : 0.2	0.091 - 0.23	0.099	0.048	0.485	2.660	G/NP	0.126582	Approximate Gamma UCL	0.23	*	0.23		0.23
Thorium	10 / 10	100%		0.85 - 5.7	4.39	1.42	0.323	-1.936	Non-parametric	6.347186	95% Chebyshev (Mean, Std) UCL	5.7	*	5.70		5.7
Titanium	10 / 10	100%		286 - 647	507.1	112	0.221	-0.914	Normal	572.0274	Student's-t UCL	712	833	647	843	647
Tungsten	9 / 10	90%	0.21 : 0.21	0.25 - 0.92	0.442	0.296	0.670	0.827	G/NP	0.6781	Approximate Gamma UCL	0.92	*	0.92		0.92
Uranium	10 / 10	100%		1 - 2.5	1.63	0.519	0.318	0.365	Normal	1.930653	Student's-t UCL	2.58	3.14	2.50	3.19	2.5
Vanadium	10 / 10	100%		13.4 - 35.2	25.99	7.28	0.280	-0.681	Normal	30.20753	Student's-t UCL	39.3	47.2	35.2	47.8	35.2
Zinc	3 / 10	30%	55.7 : 300	79.4 - 244	87.82	65.34	0.744	1.770	G/NP	134.5438	Approximate Gamma UCL	300	*	244		244
Zirconium	7 / 10	70%	0.46 : 1.2	1.1 - 2	1.295	0.657	0.507	-0.683	Normal	1.676057	Student's-t UCL	2.50	3.21	2.00	3.27	2

Notes: 1. For 10 samples, the non-parametric 95th percentile is the 10th ordered sample, i.e., the same as the maximum.

2. For 10 samples, the non-parametric one-sided 95% UCL on the mean is the 8th ordered sample.

3. The Student's-t value for 10-1 = 9 degrees of freedom and 95% level of confidence is 1.833.

4. The factor for a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911.

5. * - To determine a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911.

6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

7. The mean and standard deviation are computed with NDs replaced with DL/2.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Aluminum	T	SW846 3050E
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.879629	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	7430	Data are normal at 5% significance level			
Maximum	23200				
Mean	12712	95% UCL (Assuming Normal Distribution)			
Median	11550	Student's-t UCL		15336.16	
Standard Deviation	4526.902				
Variance	20492840	Gamma Distribution Test			
Coefficient of Variation	0.356112	A-D Test Statistic		0.31394	
Skewness	1.481655	A-D 5% Critical Value		0.725048	
		K-S Test Statistic		0.179721	
Gamma Statistics		K-S 5% Critical Value		0.266619	
k hat	10.243	Data follow gamma distribution			
k star (bias corrected)	7.23677	at 5% significance level			
Theta hat	1241.042	95% UCLs (Assuming Gamma Distribution)			
Theta star	1756.585	Approximate Gamma UCL		15601.81	
nu hat	204.8601	Adjusted Gamma UCL		16178.39	
nu star	144.7354				
Approx. Chi Square Value (.05)	117.9271	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.965079	
Adjusted Chi Square Value	113.7243	Shapiro-Wilk 5% Critical Value		0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	8.913281	95% UCLs (Assuming Lognormal Distribution)			
Maximum of log data	10.05191	95% H-UCL		15806.69	
Mean of log data	9.400694	95% Chebyshev (MVUE) UCL		18361.72	
Standard Deviation of log data	0.322866	97.5% Chebyshev (MVUE) UCL		20822.27	
Variance of log data	0.104242	99% Chebyshev (MVUE) UCL		25655.55	
95% Non-parametric UCLs					
		CLT UCL		15066.66	
		Adj-CLT UCL (Adjusted for skewness)		15783.35	
		Mod-t UCL (Adjusted for skewness)		15447.95	
		Jackknife UCL		15336.16	
		Standard Bootstrap UCL		14968.39	
		Bootstrap-t UCL		16888.96	
		Hall's Bootstrap UCL		27472.21	
RECOMMENDATION		Percentile Bootstrap UCL		15155	
Data are normal (0.05)		BCA Bootstrap UCL		15653	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		18951.9	
		97.5% Chebyshev (Mean, Sd) UCL		21651.91	
		99% Chebyshev (Mean, Sd) UCL		26955.56	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Arsenic	T	SW846 3050B/6
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.829408
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	3.7	Data not normal at 5% significance level		
Maximum	11.8			
Mean	6.72	95% UCL (Assuming Normal Distribution)		
Median	5.45	Student's-t UCL		8.527226
Standard Deviation	3.11762			
Variance	9.719556	Gamma Distribution Test		
Coefficient of Variation	0.463932	A-D Test Statistic		0.596933
Skewness	0.900565	A-D 5% Critical Value		0.728773
		K-S Test Statistic		0.203494
		K-S 5% Critical Value		0.267307
Gamma Statistics				
k hat	5.771183	Data follow gamma distribution		
k star (bias corrected)	4.106495	at 5% significance level		
Theta hat	1.164406			
Theta star	1.636432	95% UCLs (Assuming Gamma Distribution)		
nu hat	115.4237	Approximate Gamma UCL		8.867257
nu star	82.1299	Adjusted Gamma UCL		9.316444
Approx.Chi Square Value (.05)	62.24168			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	59.24073	Shapiro-Wilk Test Statistic		0.889203
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	1.308333	Data are lognormal at 5% significance level		
Maximum of log data	2.4681			
Mean of log data	1.815956	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.435571	95% H-UCL		9.212574
Variance of log data	0.189722	95% Chebyshev (MVUE) UCL		10.7637
		97.5% Chebyshev (MVUE) UCL		12.5262
		99% Chebyshev (MVUE) UCL		15.98829
		95% Non-parametric UCLs		
		CLT UCL		8.341625
		Adj-CLT UCL (Adjusted for skewness)		8.641623
		Mod-t UCL (Adjusted for skewness)		8.574019
		Jackknife UCL		8.527226
		Standard Bootstrap UCL		8.226255
		Bootstrap-t UCL		9.0961
		Hall's Bootstrap UCL		8.316634
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL		8.28
		BCA Bootstrap UCL		8.45
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		11.01734
		97.5% Chebyshev (Mean, Sd) UCL		12.87681
		99% Chebyshev (Mean, Sd) UCL		16.52936

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\BaCl Variable:	Barium	T	SW846 3050B/60
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.94486
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	25.8	Data are normal at 5% significance level		
Maximum	54.7			
Mean	40.57	95% UCL (Assuming Normal Distribution)		
Median	40.8	Student's-t UCL		46.2543
Standard Deviation	9.8059			
Variance	96.15567	Gamma Distribution Test		
Coefficient of Variation	0.241703	A-D Test Statistic		0.342197
Skewness	-0.205737	A-D 5% Critical Value		0.72467
		K-S Test Statistic		0.157217
		K-S 5% Critical Value		0.266278
Gamma Statistics				
k hat	17.64245	Data follow gamma distribution		
k star (bias corrected)	12.41638	at 5% significance level		
Theta hat	2.299568			
Theta star	3.267458	95% UCLs (Assuming Gamma Distribution)		
nu hat	352.8489	Approximate Gamma UCL		47.33543
nu star	248.3276	Adjusted Gamma UCL		48.64122
Approx.Chi Square Value (.05)	212.8353			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	207.1217	Shapiro-Wilk Test Statistic		0.915766
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	3.250374	Data are lognormal at 5% significance level		
Maximum of log data	4.001864			
Mean of log data	3.67442	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.258145	95% H-UCL		48.14523
Variance of log data	0.066639	95% Chebyshev (MVUE) UCL		55.15345
		97.5% Chebyshev (MVUE) UCL		61.44092
		99% Chebyshev (MVUE) UCL		73.79144
95% Non-parametric UCLs				
		CLT UCL		45.67052
		Adj-CLT UCL (Adjusted for skewness)		45.45496
		Mod-t UCL (Adjusted for skewness)		46.22067
		Jackknife UCL		46.2543
		Standard Bootstrap UCL		45.45559
		Bootstrap-t UCL		46.16886
		Hall's Bootstrap UCL		45.45043
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL		45.26
		BCA Bootstrap UCL		45.22
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		54.0865
		97.5% Chebyshev (Mean, Sd) UCL		59.9351
		99% Chebyshev (Mean, Sd) UCL		71.42354

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac	Variable:	Beryllium	T	SW846 3050B/
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.96128		
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	0.24	Data are normal at 5% significance level			
Maximum	0.63				
Mean	0.402	95% UCL (Assuming Normal Distribution)			
Median	0.385	Student's-t UCL	0.474649		
Standard Deviation	0.125326				
Variance	0.015707	Gamma Distribution Test			
Coefficient of Variation	0.311757	A-D Test Statistic	0.164858		
Skewness	0.485558	A-D 5% Critical Value	0.724982		
Gamma Statistics					
k hat	11.53493	Data follow gamma distribution			
k star (bias corrected)	8.141118	at 5% significance level			
Theta hat	0.034851				
Theta star	0.049379	95% UCLs (Assuming Gamma Distribution)			
nu hat	230.6986	Approximate Gamma UCL	0.487325		
nu star	162.8224	Adjusted Gamma UCL	0.504212		
Approx.Chi Square Value (.05)	134.314				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	129.8156	Shapiro-Wilk Test Statistic	0.974556		
Log-transformed Statistics					
Minimum of log data	-1.427116	Shapiro-Wilk 5% Critical Value	0.842		
Maximum of log data	-0.462035	Data are lognormal at 5% significance level			
Mean of log data	-0.955276				
Standard Deviation of log data	0.314074	95% UCLs (Assuming Lognormal Distribution)			
Variance of log data	0.098642	95% H-UCL	0.497863		
		95% Chebyshev (MVUE) UCL	0.577505		
		97.5% Chebyshev (MVUE) UCL	0.653404		
		99% Chebyshev (MVUE) UCL	0.802494		
95% Non-parametric UCLs					
		CLT UCL	0.467188		
		Adj-CLT UCL (Adjusted for skewness)	0.47369		
		Mod-t UCL (Adjusted for skewness)	0.475663		
		Jackknife UCL	0.474649		
		Standard Bootstrap UCL	0.462708		
		Bootstrap-t UCL	0.479279		
		Hall's Bootstrap UCL	0.473398		
RECOMMENDATION					
Data are normal (0.05)					
Use Student's-t UCL					
		95% Chebyshev (Mean, Sd) UCL	0.57475		
		97.5% Chebyshev (Mean, Sd) UCL	0.649499		
		99% Chebyshev (Mean, Sd) UCL	0.79633		

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Cadmium	T	SW846 3050B
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.666954	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.16	Data not normal at 5% significance level		
Maximum	2.9	95% UCL (Assuming Normal Distribution)		
Mean	0.715	Student's-t UCL	1.189444	
Median	0.435			
Standard Deviation	0.818457			
Variance	0.669872	Gamma Distribution Test		
Coefficient of Variation	1.144695	A-D Test Statistic	0.52093	
Skewness	2.528931	A-D 5% Critical Value	0.740569	
Gamma Statistics		K-S Test Statistic	0.197328	
k hat	1.425948	K-S 5% Critical Value	0.27151	
k star (bias corrected)	1.06483	Data follow gamma distribution at 5% significance level		
Theta hat	0.501421			
Theta star	0.671469	95% UCLs (Assuming Gamma Distribution)		
nu hat	28.51896	Approximate Gamma UCL	1.289241	
nu star	21.29661	Adjusted Gamma UCL	1.43616	
Approx.Chi Square Value (.05)	11.81088			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	10.60263	Shapiro-Wilk Test Statistic	0.95101	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	-1.832581	Data are lognormal at 5% significance level		
Maximum of log data	1.064711			
Mean of log data	-0.725416	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.86554	95% H-UCL	1.595018	
Variance of log data	0.74916	95% Chebyshev (MVUE) UCL	1.506226	
		97.5% Chebyshev (MVUE) UCL	1.867333	
		99% Chebyshev (MVUE) UCL	2.576658	
		95% Non-parametric UCLs		
		CLT UCL	1.140719	
		Adj-CLT UCL (Adjusted for skewness)	1.361883	
		Mod-t UCL (Adjusted for skewness)	1.223941	
		Jackknife UCL	1.189444	
		Standard Bootstrap UCL	1.121479	
		Bootstrap-t UCL	2.082162	
		Hall's Bootstrap UCL	2.889543	
RECOMMENDATION		Percentile Bootstrap UCL	1.159	
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	1.417	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	1.843165	
		97.5% Chebyshev (Mean, Sd) UCL	2.331324	
		99% Chebyshev (Mean, Sd) UCL	3.290216	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Calcium	T	SW846 3050B/6
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.968529	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	638	Data are normal at 5% significance level		
Maximum	1400			
Mean	976.7	95% UCL (Assuming Normal Distribution)		
Median	1013	Student's-t UCL	1111.804	
Standard Deviation	233.0665			
Variance	54320.01			
Coefficient of Variation	0.238627			
Skewness	0.244448			
Gamma Statistics				
k hat	19.21766	Data follow gamma distribution		
k star (bias corrected)	13.51903	at 5% significance level		
Theta hat	50.82304			
Theta star	72.24631	95% UCLs (Assuming Gamma Distribution)		
nu hat	384.3532	Approximate Gamma UCL	1131.968	
nu star	270.3806	Adjusted Gamma UCL	1161.804	
Approx.Chi Square Value (.05)	233.2935			
Adjusted Level of Significance	0.0267			
Adjusted Chi Square Value	227.3022			
Log-transformed Statistics				
Minimum of log data	6.458338	Shapiro-Wilk Test Statistic	0.968513	
Maximum of log data	7.244228	Shapiro-Wilk 5% Critical Value	0.842	
Mean of log data	6.857936	Data are lognormal at 5% significance level		
Standard Deviation of log data	0.243554			
Variance of log data	0.059319			
95% Non-parametric UCLs				
		CLT UCL	1097.929	
		Adj-CLT UCL (Adjusted for skewness)	1104.017	
		Mod-t UCL (Adjusted for skewness)	1112.754	
		Jackknife UCL	1111.804	
		Standard Bootstrap UCL	1092.554	
		Bootstrap-t UCL	1124.03	
		Hall's Bootstrap UCL	1110.618	
		Percentile Bootstrap UCL	1090.5	
		BCA Bootstrap UCL	1101.6	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	1297.96	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1436.97	
		99% Chebyshev (Mean, Sd) UCL	1710.027	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Chromium	T	SW846 3050E
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.942662	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	13.7	Data are normal at 5% significance level		
Maximum	37.5			
Mean	25.22	95% UCL (Assuming Normal Distribution)		
Median	27.35	Student's-t UCL	29.62056	
Standard Deviation	7.59134			
Variance	57.62844	Gamma Distribution Test		
Coefficient of Variation	0.301005	A-D Test Statistic	0.470406	
Skewness	-0.29177	A-D 5% Critical Value	0.725022	
		K-S Test Statistic	0.223643	
		K-S 5% Critical Value	0.266596	
Gamma Statistics				
k hat	10.74759	Data follow gamma distribution		
k star (bias corrected)	7.589982	at 5% significance level		
Theta hat	2.346572			
Theta star	3.322801	95% UCLs (Assuming Gamma Distribution)		
nu hat	214.9519	Approximate Gamma UCL	30.79578	
nu star	151.7996	Adjusted Gamma UCL	31.90455	
Approx.Chi Square Value (.05)	124.3153			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	119.995	Shapiro-Wilk Test Statistic	0.889644	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	2.617396	Data are lognormal at 5% significance level		
Maximum of log data	3.624341			
Mean of log data	3.180394	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.337539	95% H-UCL	31.95468	
Variance of log data	0.113933	95% Chebyshev (MVUE) UCL	37.19765	
		97.5% Chebyshev (MVUE) UCL	42.33895	
		99% Chebyshev (MVUE) UCL	52.43803	
95% Non-parametric UCLs				
		CLT UCL	29.16862	
		Adj-CLT UCL (Adjusted for skewness)	28.93196	
		Mod-t UCL (Adjusted for skewness)	29.58364	
		Jackknife UCL	29.62056	
		Standard Bootstrap UCL	29.0031	
		Bootstrap-t UCL	29.0123	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	29.15852	
		Percentile Bootstrap UCL	28.95	
		BCA Bootstrap UCL	28.65	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	35.68394	
		97.5% Chebyshev (Mean, Sd) UCL	40.2117	
		99% Chebyshev (Mean, Sd) UCL	49.10559	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Cobalt	T	SW846 3050B/60
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic			0.95919
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value			0.842
Minimum	1.8	Data are normal at 5% significance level			
Maximum	5.7				
Mean	3.84	95% UCL (Assuming Normal Distribution)			
Median	3.9	Student's-t UCL			4.612522
Standard Deviation	1.332666				
Variance	1.776	Gamma Distribution Test			
Coefficient of Variation	0.347049	A-D Test Statistic			0.255098
Skewness	-0.123274	A-D 5% Critical Value			0.7266
		K-S Test Statistic			0.16268
		K-S 5% Critical Value			0.266911
Gamma Statistics		Data follow gamma distribution at 5% significance level			
k hat	8.246377				
k star (bias corrected)	5.839131				
Theta hat	0.465659				
Theta star	0.657632	95% UCLs (Assuming Gamma Distribution)			
nu hat	164.9275	Approximate Gamma UCL			4.83097
nu star	116.7826	Adjusted Gamma UCL			5.031914
Approx.Chi Square Value (.05)	92.82716				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	89.12021	Shapiro-Wilk Test Statistic			0.940473
		Shapiro-Wilk 5% Critical Value			0.842
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	0.587787				
Maximum of log data	1.740466	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	1.283616	95% H-UCL			5.068179
Standard Deviation of log data	0.384553	95% Chebyshev (MVUE) UCL			5.923601
Variance of log data	0.147881	97.5% Chebyshev (MVUE) UCL			6.818028
		99% Chebyshev (MVUE) UCL			8.574958
		95% Non-parametric UCLs			
		CLT UCL			4.533184
		Adj-CLT UCL (Adjusted for skewness)			4.51563
		Mod-t UCL (Adjusted for skewness)			4.609784
		Jackknife UCL			4.612522
		Standard Bootstrap UCL			4.490415
		Bootstrap-t UCL			4.581307
		Hall's Bootstrap UCL			4.501331
RECOMMENDATION		Percentile Bootstrap UCL			4.48
Data are normal (0.05)		BCA Bootstrap UCL			4.51
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			5.676954
		97.5% Chebyshev (Mean, Sd) UCL			6.471805
		99% Chebyshev (Mean, Sd) UCL			8.033137

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Copper T SW846 3050B/60		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.79279
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	8.35	Data not normal at 5% significance level	
Maximum	30.8		
Mean	14.145	95% UCL (Assuming Normal Distribution)	
Median	12.5	Student's-t UCL	17.99634
Standard Deviation	6.643897		
Variance	44.14136	Gamma Distribution Test	
Coefficient of Variation	0.469699	A-D Test Statistic	0.438335
Skewness	1.961987	A-D 5% Critical Value	0.728072
		K-S Test Statistic	0.169418
Gamma Statistics		K-S 5% Critical Value	0.267179
k hat	6.568984	Data follow gamma distribution	
k star (bias corrected)	4.664956	at 5% significance level	
Theta hat	2.153301		
Theta star	3.032183	95% UCLs (Assuming Gamma Distribution)	
nu hat	131.3797	Approximate Gamma UCL	18.32449
nu star	93.29911	Adjusted Gamma UCL	19.18837
Approx.Chi Square Value (.05)	72.01923		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	68.77685	Shapiro-Wilk Test Statistic	0.917597
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.122262		
Maximum of log data	3.427515	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.571319	95% H-UCL	18.62846
Standard Deviation of log data	0.395878	95% Chebyshev (MVUE) UCL	21.78052
Variance of log data	0.156719	97.5% Chebyshev (MVUE) UCL	25.13296
		99% Chebyshev (MVUE) UCL	31.7182
		95% Non-parametric UCLs	
		CLT UCL	17.60081
		Adj-CLT UCL (Adjusted for skewness)	18.99365
		Mod-t UCL (Adjusted for skewness)	18.2136
		Jackknife UCL	17.99634
		Standard Bootstrap UCL	17.35845
		Bootstrap-t UCL	20.89661
		Hall's Bootstrap UCL	32.10042
RECOMMENDATION		Percentile Bootstrap UCL	17.67
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	19.225
		95% Chebyshev (Mean, Sd) UCL	23.30298
Use Approximate Gamma UCL		97.5% Chebyshev (Mean, Sd) UCL	27.26564
		99% Chebyshev (Mean, Sd) UCL	35.04953

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Iron	T	SW846 3050B/6020
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic			0.939668
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value			0.842
Minimum	6610	Data are normal at 5% significance level			
Maximum	18200				
Mean	12292	95% UCL (Assuming Normal Distribution)			
Median	12650	Student's-t UCL			14502.95
Standard Deviation	3814.079				
Variance	14547196				
Coefficient of Variation	0.31029	Gamma Distribution Test			
Skewness	-0.15358	A-D Test Statistic			0.446913
Gamma Statistics		A-D 5% Critical Value			0.725038
k hat	10.42218	K-S Test Statistic			0.24204
k star (bias corrected)	7.36219	K-S 5% Critical Value			0.266611
Theta hat	1179.408	Data follow gamma distribution			
Theta star	1669.612	at 5% significance level			
nu hat	208.4435	95% UCLs (Assuming Gamma Distribution)			
nu star	147.2438	Approximate Gamma UCL			15058.38
Approx.Chi Square Value (.05)	120.1936	Adjusted Gamma UCL			15609.66
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	115.9488	Shapiro-Wilk Test Statistic			0.908935
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value			0.842
Minimum of log data	8.796339	Data are lognormal at 5% significance level			
Maximum of log data	9.809177	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	9.367963	95% H-UCL			15593.52
Standard Deviation of log data	0.339937	95% Chebyshev (MVUE) UCL			18157.56
Variance of log data	0.115557	97.5% Chebyshev (MVUE) UCL			20679.52
		99% Chebyshev (MVUE) UCL			25633.44
95% Non-parametric UCLs					
		CLT UCL			14275.89
		Adj-CLT UCL (Adjusted for skewness)			14213.3
		Mod-t UCL (Adjusted for skewness)			14493.19
		Jackknife UCL			14502.95
		Standard Bootstrap UCL			14115.63
		Bootstrap-t UCL			14498.93
		Hall's Bootstrap UCL			14188.92
RECOMMENDATION		Percentile Bootstrap UCL			14168
Data are normal (0.05)		BCA Bootstrap UCL			14221
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			17549.34
		97.5% Chebyshev (Mean, Sd) UCL			19824.2
		99% Chebyshev (Mean, Sd) UCL			24292.72

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Lead	T	SW846 3050B/602
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.937184
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	24.8	Data are normal at 5% significance level		
Maximum	242			
Mean	136.54	95% UCL (Assuming Normal Distribution)		
Median	144	Student's-t UCL		180.85
Standard Deviation	76.43856			
Variance	5842.854	Gamma Distribution Test		
Coefficient of Variation	0.559825	A-D Test Statistic		0.377168
Skewness	-0.063814	A-D 5% Critical Value		0.733428
		K-S Test Statistic		0.197668
		K-S 5% Critical Value		0.268949
Gamma Statistics				
k hat	2.632984	Data follow gamma distribution		
k star (bias corrected)	1.909755	at 5% significance level		
Theta hat	51.85752			
Theta star	71.49607	95% UCLs (Assuming Gamma Distribution)		
nu hat	52.65967	Approximate Gamma UCL		208.2751
nu star	38.1951	Adjusted Gamma UCL		224.762
Approx.Chi Square Value (.05)	25.03977			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	23.20303	Shapiro-Wilk Test Statistic		0.896813
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics				
Minimum of log data	3.210844	Data are lognormal at 5% significance level		
Maximum of log data	5.488938			
Mean of log data	4.714861	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.744182	95% H-UCL		281.1631
Variance of log data	0.553807	95% Chebyshev (MVUE) UCL		293.4352
		97.5% Chebyshev (MVUE) UCL		358.7846
		99% Chebyshev (MVUE) UCL		487.1509
		95% Non-parametric UCLs		
		CLT UCL		176.2994
		Adj-CLT UCL (Adjusted for skewness)		175.7782
		Mod-t UCL (Adjusted for skewness)		180.7687
		Jackknife UCL		180.85
		Standard Bootstrap UCL		174.8364
		Bootstrap-t UCL		178.2119
		Hall's Bootstrap UCL		171.9954
		Percentile Bootstrap UCL		174.18
		BCA Bootstrap UCL		175.76
RECOMMENDATION				
Data are normal (0.05)				
Use Student's-t UCL				
		95% Chebyshev (Mean, Sd) UCL		241.9033
		97.5% Chebyshev (Mean, Sd) UCL		287.4941
		99% Chebyshev (Mean, Sd) UCL		377.0483

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Batch Variable:	Magnesium	T	SW846 3050
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.907217
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	1230	Data are normal at 5% significance level		
Maximum	3890			
Mean	2839	95% UCL (Assuming Normal Distribution)		
Median	3065	Student's-t UCL		3319.226
Standard Deviation	828.4316			
Variance	686298.9	Gamma Distribution Test		
Coefficient of Variation	0.291804	A-D Test Statistic		0.694694
Skewness	-0.964072	A-D 5% Critical Value		0.725054
		K-S Test Statistic		0.272882
		K-S 5% Critical Value		0.266625
Gamma Statistics				
k hat	10.11557	Data follow approximate gamma distribution		
k star (bias corrected)	7.147568	at 5% significance level		
Theta hat	280.6564			
Theta star	397.1981	95% UCLs (Assuming Gamma Distribution)		
nu hat	202.3115	Approximate Gamma UCL		3489.096
nu star	142.9514	Adjusted Gamma UCL		3618.917
Approx.Chi Square Value (.05)	116.3164			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	112.1437	Shapiro-Wilk Test Statistic		0.832912
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	7.114769			
Maximum of log data	8.266164	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.900965	95% H-UCL		3676.551
Standard Deviation of log data	0.359058	95% Chebyshev (MVUE) UCL		4289.862
Variance of log data	0.128923	97.5% Chebyshev (MVUE) UCL		4908.439
		99% Chebyshev (MVUE) UCL		6123.515
		95% Non-parametric UCLs		
		CLT UCL		3269.907
		Adj-CLT UCL (Adjusted for skewness)		3184.569
		Mod-t UCL (Adjusted for skewness)		3305.915
		Jackknife UCL		3319.226
		Standard Bootstrap UCL		3232.871
		Bootstrap-t UCL		3247.682
RECOMMENDATION		Hall's Bootstrap UCL		3188.974
Data are normal (0.05)		Percentile Bootstrap UCL		3224
		BCA Bootstrap UCL		3189
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		3980.914
		97.5% Chebyshev (Mean, Sd) UCL		4475.021
		99% Chebyshev (Mean, Sd) UCL		5445.599

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Manganese	T	SW846 3050
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.875161	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	57	Data are normal at 5% significance level			
Maximum	121				
Mean	95.44	95% UCL (Assuming Normal Distribution)			
Median	100.25	Student's-t UCL		108.8349	
Standard Deviation	23.1073				
Variance	533.9471	Gamma Distribution Test			
Coefficient of Variation	0.242113	A-D Test Statistic		0.699715	
Skewness	-0.852757	A-D 5% Critical Value		0.724749	
Gamma Statistics					
k hat	16.09887	K-S Test Statistic		0.19533	
k star (bias corrected)	11.33588	K-S 5% Critical Value		0.266349	
Theta hat	5.928365	Data follow gamma distribution			
Theta star	8.419286	at 5% significance level			
nu hat	321.9775	95% UCLs (Assuming Gamma Distribution)			
nu star	226.7176	Approximate Gamma UCL		112.1958	
Approx.Chi Square Value (.05)	192.8585	Adjusted Gamma UCL		115.4459	
Adjusted Level of Significance	0.0267				
Adjusted Chi Square Value	187.4292	Lognormal Distribution Test			
Log-transformed Statistics					
Minimum of log data	4.043051	Shapiro-Wilk Test Statistic		0.824763	
Maximum of log data	4.795791	Shapiro-Wilk 5% Critical Value		0.842	
Mean of log data	4.527118	Data not lognormal at 5% significance level			
Standard Deviation of log data	0.276049				
Variance of log data	0.076203	95% UCLs (Assuming Lognormal Distribution)			
		95% H-UCL		114.9937	
		95% Chebyshev (MVUE) UCL		132.3437	
		97.5% Chebyshev (MVUE) UCL		148.196	
		99% Chebyshev (MVUE) UCL		179.3347	
95% Non-parametric UCLs					
		CLT UCL		107.4592	
		Adj-CLT UCL (Adjusted for skewness)		105.3537	
		Mod-t UCL (Adjusted for skewness)		108.5064	
		Jackknife UCL		108.8349	
		Standard Bootstrap UCL		106.6609	
		Bootstrap-t UCL		106.5348	
		Hall's Bootstrap UCL		104.7065	
		Percentile Bootstrap UCL		106.51	
		BCA Bootstrap UCL		105.31	
RECOMMENDATION					
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL		127.2912	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL		141.0733	
		99% Chebyshev (Mean, Sd) UCL		168.1454	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Mercury	T	SW846 7471A
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.756614	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	0.0074	Data not normal at 5% significance level			
Maximum	0.35				
Mean	0.10114	95% UCL (Assuming Normal Distribution)			
Median	0.059	Student's-t UCL		0.16199	
Standard Deviation	0.104971				
Variance	0.011019	Gamma Distribution Test			
Coefficient of Variation	1.037876	A-D Test Statistic		0.463384	
Skewness	1.863266	A-D 5% Critical Value		0.74339	
Gamma Statistics		K-S Test Statistic		0.200926	
k hat	1.269894	K-S 5% Critical Value		0.27233	
k star (bias corrected)	0.955592	Data follow gamma distribution			
Theta hat	0.079644	at 5% significance level			
Theta star	0.10584	95% UCLs (Assuming Gamma Distribution)			
nu hat	25.39788	Approximate Gamma UCL		0.189551	
nu star	19.11185	Adjusted Gamma UCL		0.212732	
Approx.Chi Square Value (.05)	10.19766	Lognormal Distribution Test			
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.934018	
Adjusted Chi Square Value	9.086429	Shapiro-Wilk 5% Critical Value		0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	-4.906275				
Maximum of log data	-1.049822	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	-2.734076	95% H-UCL		0.344109	
Standard Deviation of log data	1.047821	95% Chebyshev (MVUE) UCL		0.262653	
Variance of log data	1.097929	97.5% Chebyshev (MVUE) UCL		0.331159	
		99% Chebyshev (MVUE) UCL		0.465727	
		95% Non-parametric UCLs			
		CLT UCL		0.15574	
		Adj-CLT UCL (Adjusted for skewness)		0.176639	
		Mod-t UCL (Adjusted for skewness)		0.165249	
		Jackknife UCL		0.16199	
		Standard Bootstrap UCL		0.152079	
		Bootstrap-t UCL		0.295365	
		Hall's Bootstrap UCL		0.447178	
RECOMMENDATION		Percentile Bootstrap UCL		0.1562	
Data follow gamma distribution (0.05)		BCA Bootstrap UCL		0.1816	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL		0.245832	
		97.5% Chebyshev (Mean, Sd) UCL		0.308441	
		99% Chebyshev (Mean, Sd) UCL		0.431423	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Molybdenum	T	SW846 305
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.878551		
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	0.28	Data are normal at 5% significance level			
Maximum	1.3				
Mean	0.855	95% UCL (Assuming Normal Distribution)			
Median	0.71	Student's-t UCL	1.065347		
Standard Deviation	0.362867				
Variance	0.131672	Gamma Distribution Test			
Coefficient of Variation	0.424405	A-D Test Statistic	0.550658		
Skewness	0.047667	A-D 5% Critical Value	0.729136		
Gamma Statistics		K-S Test Statistic	0.234455		
k hat	5.357767	K-S 5% Critical Value	0.267373		
k star (bias corrected)	3.817104	Data follow gamma distribution at 5% significance level			
Theta hat	0.159581				
Theta star	0.223992	95% UCLs (Assuming Gamma Distribution)			
nu hat	107.1553	Approximate Gamma UCL	1.140877		
nu star	76.34207	Adjusted Gamma UCL	1.201117		
Approx.Chi Square Value (.05)	57.21255				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	54.34314	Shapiro-Wilk Test Statistic	0.878708		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842		
Minimum of log data	-1.272966	Data are lognormal at 5% significance level			
Maximum of log data	0.262364				
Mean of log data	-0.252869	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.488723	95% H-UCL	1.253137		
Variance of log data	0.238851	95% Chebyshev (MVUE) UCL	1.455722		
		97.5% Chebyshev (MVUE) UCL	1.711847		
		99% Chebyshev (MVUE) UCL	2.214956		
95% Non-parametric UCLs					
		CLT UCL	1.043745		
		Adj-CLT UCL (Adjusted for skewness)	1.045593		
		Mod-t UCL (Adjusted for skewness)	1.065635		
		Jackknife UCL	1.065347		
		Standard Bootstrap UCL	1.029648		
		Bootstrap-t UCL	1.067575		
RECOMMENDATION					
Data are normal (0.05)				Hall's Bootstrap UCL	1.0236
				Percentile Bootstrap UCL	1.029
				BCA Bootstrap UCL	1.024
Use Student's-t UCL				95% Chebyshev (Mean, Sd) UCL	1.355177
				97.5% Chebyshev (Mean, Sd) UCL	1.571604
				99% Chebyshev (Mean, Sd) UCL	1.996733

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Nickel	T	SW846 3050B/60
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.956429	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	7.4	Data are normal at 5% significance level		
Maximum	21.1			
Mean	13.64	95% UCL (Assuming Normal Distribution)		
Median	13.3	Student's-t UCL	16.09531	
Standard Deviation	4.235616			
Variance	17.94044			
Coefficient of Variation	0.310529	Gamma Distribution Test		
Skewness	0.208521	A-D Test Statistic	0.306167	
Gamma Statistics		A-D 5% Critical Value	0.725007	
k hat	11.04774	K-S Test Statistic	0.173535	
k star (bias corrected)	7.800084	K-S 5% Critical Value	0.266582	
Theta hat	1.234642	Data follow gamma distribution		
Theta star	1.748699	at 5% significance level		
nu hat	220.9548	95% UCLs (Assuming Gamma Distribution)		
nu star	156.0017	Approximate Gamma UCL	16.60801	
Approx.Chi Square Value (.05)	128.1227	Adjusted Gamma UCL	17.1971	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	123.7338	Shapiro-Wilk Test Statistic	0.953409	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	2.00148	Data are lognormal at 5% significance level		
Maximum of log data	3.049273	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.567066	95% H-UCL	17.07199	
Standard Deviation of log data	0.325463	95% Chebyshev (MVUE) UCL	19.83946	
Variance of log data	0.105926	97.5% Chebyshev (MVUE) UCL	22.51298	
		99% Chebyshev (MVUE) UCL	27.7646	
RECOMMENDATION		95% Non-parametric UCLs		
Data are normal (0.05)		CLT UCL	15.84315	
Use Student's-t UCL		Adj-CLT UCL (Adjusted for skewness)	15.93752	
		Mod-t UCL (Adjusted for skewness)	16.11003	
		Jackknife UCL	16.09531	
		Standard Bootstrap UCL	15.72722	
		Bootstrap-t UCL	16.3659	
		Hall's Bootstrap UCL	15.97227	
		Percentile Bootstrap UCL	15.76	
		BCA Bootstrap UCL	15.59	
		95% Chebyshev (Mean, Sd) UCL	19.47839	
		97.5% Chebyshev (Mean, Sd) UCL	22.00467	
		99% Chebyshev (Mean, Sd) UCL	26.96706	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Potassium	T	SW846 3050E
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.947643	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	328.5	Data are normal at 5% significance level		
Maximum	2330			
Mean	1475.85	95% UCL (Assuming Normal Distribution)		
Median	1580	Student's-t UCL	1785.85	
Standard Deviation	534.7772			
Variance	285986.7	Gamma Distribution Test		
Coefficient of Variation	0.362352	A-D Test Statistic	0.727193	
Skewness	-0.772594	A-D 5% Critical Value	0.729163	
		K-S Test Statistic	0.21579	
		K-S 5% Critical Value	0.267378	
Gamma Statistics				
k hat	5.326631	Data follow gamma distribution		
k star (bias corrected)	3.795309	at 5% significance level		
Theta hat	277.07			
Theta star	388.8617	95% UCLs (Assuming Gamma Distribution)		
nu hat	106.5326	Approximate Gamma UCL	1971.078	
nu star	75.90617	Adjusted Gamma UCL	2075.494	
Approx.Chi Square Value (.05)	56.83494			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	53.97563	Shapiro-Wilk Test Statistic	0.75514	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	5.794537	Data not lognormal at 5% significance level		
Maximum of log data	7.753624			
Mean of log data	7.200195	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.539099	95% H-UCL	2331.99	
Variance of log data	0.290628	95% Chebyshev (MVUE) UCL	2680.551	
		97.5% Chebyshev (MVUE) UCL	3180.748	
		99% Chebyshev (MVUE) UCL	4163.288	
95% Non-parametric UCLs				
		CLT UCL	1754.014	
		Adj-CLT UCL (Adjusted for skewness)	1709.866	
		Mod-t UCL (Adjusted for skewness)	1778.964	
		Jackknife UCL	1785.85	
		Standard Bootstrap UCL	1741.759	
		Bootstrap-t UCL	1747.784	
		Hall's Bootstrap UCL	1756.439	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	1725	
		BCA Bootstrap UCL	1709	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2212.99	
		97.5% Chebyshev (Mean, Sd) UCL	2531.95	
		99% Chebyshev (Mean, Sd) UCL	3158.487	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Silver		T	SW846 3050B/602
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.555053
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842
Minimum	0.0175	Data not normal at 5% significance level		
Maximum	0.17			
Mean	0.0453	95% UCL (Assuming Normal Distribution)		
Median	0.03475	Student's-t UCL		0.071194
Standard Deviation	0.044669			
Variance	0.001995	Gamma Distribution Test		
Coefficient of Variation	0.986063	A-D Test Statistic		1.153852
Skewness	2.939354	A-D 5% Critical Value		0.734605
		K-S Test Statistic		0.322427
		K-S 5% Critical Value		0.26942
Gamma Statistics				
k hat	2.28673	Data do not follow gamma distribution		
k star (bias corrected)	1.667377	at 5% significance level		
Theta hat	0.01981			
Theta star	0.027168	95% UCLs (Assuming Gamma Distribution)		
nu hat	45.73459	Approximate Gamma UCL		0.071454
nu star	33.34755	Adjusted Gamma UCL		0.077597
Approx.Chi Square Value (.05)	21.14141			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	19.46791	Shapiro-Wilk Test Statistic		0.820621
		Shapiro-Wilk 5% Critical Value		0.842
Log-transformed Statistics			Data not lognormal at 5% significance level	
Minimum of log data	-4.045554			
Maximum of log data	-1.771957	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-3.328756	95% H-UCL		0.071719
Standard Deviation of log data	0.623228	95% Chebyshev (MVUE) UCL		0.080083
Variance of log data	0.388413	97.5% Chebyshev (MVUE) UCL		0.096316
		99% Chebyshev (MVUE) UCL		0.128202
			95% Non-parametric UCLs	
			CLT UCL	0.068534
			Adj-CLT UCL (Adjusted for skewness)	0.082564
			Mod-t UCL (Adjusted for skewness)	0.073382
			Jackknife UCL	0.071194
			Standard Bootstrap UCL	0.067695
			Bootstrap-t UCL	0.137058
			Hall's Bootstrap UCL	0.171319
			Percentile Bootstrap UCL	0.07255
			BCA Bootstrap UCL	0.0777
RECOMMENDATION			95% Chebyshev (Mean, Sd) UCL	0.106871
Data are Non-parametric (0.05)			97.5% Chebyshev (Mean, Sd) UCL	0.133514
Use 95% Chebyshev (Mean, Sd) UCL			99% Chebyshev (Mean, Sd) UCL	0.185847

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Sodium T SW846 3050B/6		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.819543
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	57.2	Data not normal at 5% significance level	
Maximum	393		
Mean	172.69	95% UCL (Assuming Normal Distribution)	
Median	128.5	Student's-t UCL	244.3603
Standard Deviation	123.6374		
Variance	15286.22	Gamma Distribution Test	
Coefficient of Variation	0.71595	A-D Test Statistic	0.414315
Skewness	1.1752	A-D 5% Critical Value	0.733826
		K-S Test Statistic	0.155876
		K-S 5% Critical Value	0.269108
Gamma Statistics			
k hat	2.515833	Data follow gamma distribution	
k star (bias corrected)	1.82775	at 5% significance level	
Theta hat	68.64129		
Theta star	94.48231	95% UCLs (Assuming Gamma Distribution)	
nu hat	50.31666	Approximate Gamma UCL	266.2052
nu star	36.55499	Adjusted Gamma UCL	287.8443
Approx.Chi Square Value (.05)	23.7136		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	21.93089	Shapiro-Wilk Test Statistic	0.937216
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.046554		
Maximum of log data	5.97381	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.939785	95% H-UCL	307.1213
Standard Deviation of log data	0.674738	95% Chebyshev (MVUE) UCL	334.4762
Variance of log data	0.455272	97.5% Chebyshev (MVUE) UCL	405.2619
		99% Chebyshev (MVUE) UCL	544.3069
95% Non-parametric UCLs			
		CLT UCL	236.9998
		Adj-CLT UCL (Adjusted for skewness)	252.5252
		Mod-t UCL (Adjusted for skewness)	246.7819
		Jackknife UCL	244.3603
		Standard Bootstrap UCL	233.719
		Bootstrap-t UCL	294.4872
		Hall's Bootstrap UCL	329.6544
RECOMMENDATION			
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	238.65
		BCA Bootstrap UCL	246.88
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	343.1125
		97.5% Chebyshev (Mean, Sd) UCL	416.8544
		99% Chebyshev (Mean, Sd) UCL	561.7062

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Thallium	T	SW846 3050B/6		
Raw Statistics		Normal Distribution Test					
Number of Valid Samples		Shapiro-Wilk Test Statistic		0.655475			
Number of Unique Samples		Shapiro-Wilk 5% Critical Value		0.842			
Minimum		Data not normal at 5% significance level					
Maximum		95% UCL (Assuming Normal Distribution)					
Mean		Student's-t UCL		0.126626			
Median							
Standard Deviation		Gamma Distribution Test					
Variance		A-D Test Statistic		0.961112			
Coefficient of Variation		A-D 5% Critical Value		0.727671			
Skewness		K-S Test Statistic		0.237097			
		K-S 5% Critical Value		0.267106			
Gamma Statistics							
k hat	7.026222	Data follow approximate gamma distribution					
k star (bias corrected)	4.985022	at 5% significance level					
Theta hat	0.014033	95% UCLs (Assuming Gamma Distribution)					
Theta star	0.019779	Approximate Gamma UCL					
nu hat	140.5244	0.126582		Adjusted Gamma UCL			
nu star	99.70045						
Approx. Chi Square Value (.05)	77.6606	Lognormal Distribution Test					
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic		0.822187			
Adjusted Chi Square Value	74.28631	Shapiro-Wilk 5% Critical Value		0.842			
		Data not lognormal at 5% significance level					
Log-transformed Statistics		95% UCLs (Assuming Lognormal Distribution)					
Minimum of log data	-2.813411	95% H-UCL		0.125955			
Maximum of log data	-1.469676	95% Chebyshev (MVUE) UCL		0.147059			
Mean of log data	-2.389531	97.5% Chebyshev (MVUE) UCL		0.168565			
Standard Deviation of log data	0.366615	99% Chebyshev (MVUE) UCL		0.210809			
		95% Non-parametric UCLs					
		CLT UCL		0.123747			
		Adj-CLT UCL (Adjusted for skewness)		0.137489			
		Mod-t UCL (Adjusted for skewness)		0.128769			
		Jackknife UCL		0.126626			
		Standard Bootstrap UCL		0.122199			
		Bootstrap-t UCL		0.173843			
		Hall's Bootstrap UCL		0.23376			
RECOMMENDATION		Percentile Bootstrap UCL					
Assuming gamma distribution (0.05)		0.125		BCA Bootstrap UCL			
Use Approximate Gamma UCL		0.1405		95% Chebyshev (Mean, Sd) UCL			
		0.165241		97.5% Chebyshev (Mean, Sd) UCL			
		0.194077		99% Chebyshev (Mean, Sd) UCL			

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Thorium	T	SW846 3050B/6
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.802658	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.85	Data not normal at 5% significance level		
Maximum	5.7			
Mean	4.395	95% UCL (Assuming Normal Distribution)		
Median	4.65	Student's-t UCL	5.215982	
Standard Deviation	1.416265			
Variance	2.005806	Gamma Distribution Test		
Coefficient of Variation	0.322245	A-D Test Statistic	1.360633	
Skewness	-1.935672	A-D 5% Critical Value	0.729139	
		K-S Test Statistic	0.294622	
		K-S 5% Critical Value	0.267373	
Gamma Statistics				
k hat	5.3541	Data do not follow gamma distribution		
k star (bias corrected)	3.814537	at 5% significance level		
Theta hat	0.820866			
Theta star	1.152171	95% UCLs (Assuming Gamma Distribution)		
nu hat	107.082	Approximate Gamma UCL	5.865124	
nu star	76.29074	Adjusted Gamma UCL	6.174931	
Approx.Chi Square Value (.05)	57.16807			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	54.29985	Shapiro-Wilk Test Statistic	0.607019	
		Shapiro-Wilk 5% Critical Value	0.842	
		Data not lognormal at 5% significance level		
Log-transformed Statistics				
Minimum of log data	-0.162519			
Maximum of log data	1.740466	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	1.384184	95% H-UCL	7.209512	
Standard Deviation of log data	0.562372	95% Chebyshev (MVUE) UCL	8.232775	
Variance of log data	0.316262	97.5% Chebyshev (MVUE) UCL	9.807353	
		99% Chebyshev (MVUE) UCL	12.9003	
		95% Non-parametric UCLs		
		CLT UCL	5.131668	
		Adj-CLT UCL (Adjusted for skewness)	4.838743	
		Mod-t UCL (Adjusted for skewness)	5.170292	
		Jackknife UCL	5.215982	
		Standard Bootstrap UCL	5.112657	
		Bootstrap-t UCL	5.00538	
		Hall's Bootstrap UCL	4.931473	
RECOMMENDATION				
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	5.02	
		BCA Bootstrap UCL	4.89	
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	6.347186	
		97.5% Chebyshev (Mean, Sd) UCL	7.191899	
		99% Chebyshev (Mean, Sd) UCL	8.851173	
Recommended UCL exceeds the maximum observation				

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Titanium	T	SW846 3050B/
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.933448	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	286	Data are normal at 5% significance level		
Maximum	647			
Mean	507.1	95% UCL (Assuming Normal Distribution)		
Median	528.5	Student's-t UCL	572.0274	
Standard Deviation	112.0054			
Variance	12545.21	Gamma Distribution Test		
Coefficient of Variation	0.220874	A-D Test Statistic	0.481725	
Skewness	-0.913926	A-D 5% Critical Value	0.724584	
		K-S Test Statistic	0.219547	
Gamma Statistics				
k hat	19.32966	K-S 5% Critical Value	0.266201	
k star (bias corrected)	13.59743	Data follow gamma distribution		
Theta hat	26.23429	at 5% significance level		
Theta star	37.29382	95% UCLs (Assuming Gamma Distribution)		
nu hat	386.5932	Approximate Gamma UCL	587.4538	
nu star	271.9486	Adjusted Gamma UCL	602.8902	
Approx. Chi Square Value (.05)	234.7506			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	228.74	Shapiro-Wilk Test Statistic	0.877057	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	5.655992	Data are lognormal at 5% significance level		
Maximum of log data	6.472346			
Mean of log data	6.202618	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.252077	95% H-UCL	599.7207	
Variance of log data	0.063543	95% Chebyshev (MVUE) UCL	685.849	
		97.5% Chebyshev (MVUE) UCL	762.6599	
		99% Chebyshev (MVUE) UCL	913.54	
		95% Non-parametric UCLs		
		CLT UCL	565.3594	
		Adj-CLT UCL (Adjusted for skewness)	554.4216	
		Mod-t UCL (Adjusted for skewness)	570.3213	
		Jackknife UCL	572.0274	
		Standard Bootstrap UCL	561.2055	
		Bootstrap-t UCL	560.8056	
		Hall's Bootstrap UCL	555.0898	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	559.5	
		BCA Bootstrap UCL	557.4	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	661.4888	
		97.5% Chebyshev (Mean, Sd) UCL	728.293	
		99% Chebyshev (Mean, Sd) UCL	859.5168	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Tungsten T SW846 3050B		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.812889
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.105	Data not normal at 5% significance level	
Maximum	0.92		
Mean	0.4425	95% UCL (Assuming Normal Distribution)	
Median	0.29	Student's-t UCL	0.614327
Standard Deviation	0.296416		
Variance	0.087863	Gamma Distribution Test	
Coefficient of Variation	0.669867	A-D Test Statistic	0.681242
Skewness	0.826766	A-D 5% Critical Value	0.733606
		K-S Test Statistic	0.227493
Gamma Statistics		K-S 5% Critical Value	0.26902
k hat	2.580632	Data follow gamma distribution	
k star (bias corrected)	1.873109	at 5% significance level	
Theta hat	0.17147		
Theta star	0.236238	95% UCLs (Assuming Gamma Distribution)	
nu hat	51.61264	Approximate Gamma UCL	0.6781
nu star	37.46218	Adjusted Gamma UCL	0.732409
Approx.Chi Square Value (.05)	24.44628		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	22.63354	Shapiro-Wilk Test Statistic	0.897728
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-2.253795		
Maximum of log data	-0.083382	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.021403	95% H-UCL	0.812567
Standard Deviation of log data	0.688631	95% Chebyshev (MVUE) UCL	0.878146
Variance of log data	0.474212	97.5% Chebyshev (MVUE) UCL	1.06601
		99% Chebyshev (MVUE) UCL	1.435032
95% Non-parametric UCLs			
		CLT UCL	0.59668
		Adj-CLT UCL (Adjusted for skewness)	0.622866
		Mod-t UCL (Adjusted for skewness)	0.618411
		Jackknife UCL	0.614327
		Standard Bootstrap UCL	0.588373
		Bootstrap-t UCL	0.641458
		Hall's Bootstrap UCL	0.576543
RECOMMENDATION		Percentile Bootstrap UCL	0.601
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	0.6185
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	0.851081
		97.5% Chebyshev (Mean, Sd) UCL	1.027875
		99% Chebyshev (Mean, Sd) UCL	1.375151

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:			Uranium	T	SW846 3050B/C					
Raw Statistics			Normal Distribution Test								
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.909991							
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value		0.842							
Minimum	1	Data are normal at 5% significance level									
Maximum	2.5										
Mean	1.63	95% UCL (Assuming Normal Distribution)									
Median	1.5	Student's-t UCL		1.930653							
Standard Deviation	0.518652										
Variance	0.269	Gamma Distribution Test									
Coefficient of Variation	0.318191	A-D Test Statistic		0.461111							
Skewness	0.365187	A-D 5% Critical Value		0.725007							
			K-S Test Statistic		0.233101						
			K-S 5% Critical Value		0.266582						
Gamma Statistics											
k hat	11.04547	Data follow gamma distribution									
k star (bias corrected)	7.798498	at 5% significance level									
Theta hat	0.147572										
Theta star	0.209015	95% UCLs (Assuming Gamma Distribution)									
nu hat	220.9095	Approximate Gamma UCL		1.984723							
nu star	155.97	Adjusted Gamma UCL		2.05513							
Approx.Chi Square Value (.05)	128.0939										
Adjusted Level of Significance	0.0267	Lognormal Distribution Test									
Adjusted Chi Square Value	123.7055	Shapiro-Wilk Test Statistic		0.92049							
			Shapiro-Wilk 5% Critical Value		0.842						
Log-transformed Statistics			Data are lognormal at 5% significance level								
Minimum of log data	0										
Maximum of log data	0.916291	95% UCLs (Assuming Lognormal Distribution)									
Mean of log data	0.44263	95% H-UCL		2.028494							
Standard Deviation of log data	0.3203	95% Chebyshev (MVUE) UCL		2.355428							
Variance of log data	0.102592	97.5% Chebyshev (MVUE) UCL		2.669303							
			99% Chebyshev (MVUE) UCL		3.285851						
			95% Non-parametric UCLs								
			CLT UCL		1.899776						
			Adj-CLT UCL (Adjusted for skewness)		1.920014						
			Mod-t UCL (Adjusted for skewness)		1.93381						
			Jackknife UCL		1.930653						
			Standard Bootstrap UCL		1.882643						
			Bootstrap-t UCL		1.971216						
			Hall's Bootstrap UCL		1.878877						
RECOMMENDATION			Percentile Bootstrap UCL		1.87						
Data are normal (0.05)			BCA Bootstrap UCL		1.89						
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL		2.344913						
			97.5% Chebyshev (Mean, Sd) UCL		2.654256						
			99% Chebyshev (Mean, Sd) UCL		3.261901						

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Vanadium	T	SW846 3050E
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic		0.916603	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value		0.842	
Minimum	13.4	Data are normal at 5% significance level			
Maximum	35.2				
Mean	25.99	95% UCL (Assuming Normal Distribution)			
Median	28.65	Student's-t UCL		30.20753	
Standard Deviation	7.275598				
Variance	52.93433	Gamma Distribution Test			
Coefficient of Variation	0.279938	A-D Test Statistic		0.566136	
Skewness	-0.680952	A-D 5% Critical Value		0.72496	
Gamma Statistics					
k hat	11.9559	K-S Test Statistic		0.238846	
k star (bias corrected)	8.4358	K-S 5% Critical Value		0.26654	
Theta hat	2.173821	Data follow gamma distribution			
Theta star	3.080917	at 5% significance level			
nu hat	239.1181	95% UCLs (Assuming Gamma Distribution)			
nu star	168.716	Approximate Gamma UCL		31.39394	
Approx.Chi Square Value (.05)	139.6743	Adjusted Gamma UCL		32.46094	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	135.0832	Shapiro-Wilk Test Statistic		0.873441	
Log-transformed Statistics					
Minimum of log data	2.595255	Shapiro-Wilk 5% Critical Value		0.842	
Maximum of log data	3.561046	Data are lognormal at 5% significance level			
Mean of log data	3.215309	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.322014	95% H-UCL		32.52022	
Variance of log data	0.103693	95% Chebyshev (MVUE) UCL		37.77183	
		97.5% Chebyshev (MVUE) UCL		42.82405	
		99% Chebyshev (MVUE) UCL		52.74816	
95% Non-parametric UCLs					
		CLT UCL		29.77439	
		Adj-CLT UCL (Adjusted for skewness)		29.24501	
		Mod-t UCL (Adjusted for skewness)		30.12496	
		Jackknife UCL		30.20753	
		Standard Bootstrap UCL		29.59999	
		Bootstrap-t UCL		29.6321	
		Hall's Bootstrap UCL		29.16013	
		Percentile Bootstrap UCL		29.45	
		BCA Bootstrap UCL		29.32	
RECOMMENDATION					
Data are normal (0.05)					
Use Student's-t UCL					
		95% Chebyshev (Mean, Sd) UCL		36.01872	
		97.5% Chebyshev (Mean, Sd) UCL		40.35816	
		99% Chebyshev (Mean, Sd) UCL		48.88214	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Zinc	T	SW846 3050B/6020
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.816013	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	27.85	Data not normal at 5% significance level		
Maximum	244			
Mean	87.815	95% UCL (Assuming Normal Distribution)		
Median	72.2	Student's-t UCL	125.6915	
Standard Deviation	65.3403			
Variance	4269.354	Gamma Distribution Test		
Coefficient of Variation	0.744068	A-D Test Statistic	0.302234	
Skewness	1.770118	A-D 5% Critical Value	0.733598	
		K-S Test Statistic	0.168777	
		K-S 5% Critical Value	0.269017	
Gamma Statistics				
k hat	2.582832	Data follow gamma distribution		
k star (bias corrected)	1.874649	at 5% significance level		
Theta hat	33.9995			
Theta star	46.84343	95% UCLs (Assuming Gamma Distribution)		
nu hat	51.65664	Approximate Gamma UCL	134.5438	
nu star	37.49298	Adjusted Gamma UCL	145.3141	
Approx. Chi Square Value (.05)	24.47119			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	22.65744	Shapiro-Wilk Test Statistic	0.974467	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.326833	Data are lognormal at 5% significance level		
Maximum of log data	5.497168			
Mean of log data	4.26933	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.658182	95% H-UCL	152.317	
Variance of log data	0.433204	95% Chebyshev (MVUE) UCL	167.3238	
		97.5% Chebyshev (MVUE) UCL	202.2662	
		99% Chebyshev (MVUE) UCL	270.9038	
		95% Non-parametric UCLs		
		CLT UCL	121.8017	
		Adj-CLT UCL (Adjusted for skewness)	134.1601	
		Mod-t UCL (Adjusted for skewness)	127.6192	
		Jackknife UCL	125.6915	
		Standard Bootstrap UCL	120.309	
		Bootstrap-t UCL	166.6316	
		Hall's Bootstrap UCL	307.0334	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	121.64	
		BCA Bootstrap UCL	129.81	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	177.8804	
		97.5% Chebyshev (Mean, Sd) UCL	216.8517	
		99% Chebyshev (Mean, Sd) UCL	293.4034	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Zirconium	T	SW846 3050B
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.864153	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.23	Data are normal at 5% significance level		
Maximum	2			
Mean	1.295	95% UCL (Assuming Normal Distribution)		
Median	1.6	Student's-t UCL	1.676057	
Standard Deviation	0.657356			
Variance	0.432117	Gamma Distribution Test		
Coefficient of Variation	0.507611	A-D Test Statistic	0.849768	
Skewness	-0.683153	A-D 5% Critical Value	0.733109	
		K-S Test Statistic	0.312863	
		K-S 5% Critical Value	0.268822	
Gamma Statistics				
k hat	2.726706	Data do not follow gamma distribution		
k star (bias corrected)	1.975361	at 5% significance level		
Theta hat	0.474932			
Theta star	0.655576	95% UCLs (Assuming Gamma Distribution)		
nu hat	54.53412	Approximate Gamma UCL	1.959804	
nu star	39.50722	Adjusted Gamma UCL	2.111817	
Approx.Chi Square Value (.05)	26.1056			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	24.22646	Shapiro-Wilk Test Statistic	0.804773	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	-1.469676	Data not lognormal at 5% significance level		
Maximum of log data	0.693147			
Mean of log data	0.064073	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.752977	95% H-UCL	2.735473	
Variance of log data	0.566975	95% Chebyshev (MVUE) UCL	2.837409	
		97.5% Chebyshev (MVUE) UCL	3.473085	
		99% Chebyshev (MVUE) UCL	4.721746	
95% Non-parametric UCLs				
		CLT UCL	1.636923	
		Adj-CLT UCL (Adjusted for skewness)	1.588938	
		Mod-t UCL (Adjusted for skewness)	1.668572	
		Jackknife UCL	1.676057	
		Standard Bootstrap UCL	1.621995	
		Bootstrap-t UCL	1.621704	
		Hall's Bootstrap UCL	1.559094	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	1.62	
		BCA Bootstrap UCL	1.592	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.201102	
		97.5% Chebyshev (Mean, Sd) UCL	2.593174	
		99% Chebyshev (Mean, Sd) UCL	3.363322	

Table 13
Summary Statistics
Forest Soils by 8270C

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL		
SVOCs (UG/KG)																		
Benz[a]anthracene	2 / 14	14%	35.9 : 42.9	31.1 - 33.2	21.51	4.61	0.214	2.152	Non-parametric	23.81625	Modified-t UCL	33.2	*	33.2		33.2		
Benz[a]pyrene	3 / 14	21%	37.7 : 42.9	28 - 220	36	53.2	1.478	3.689	Non-parametric	97.95316	95% Chebyshev (Mean, Sd) UCL	220	*	220		220		
Benz[b]fluoranthene	3 / 14	21%	37.7 : 42.9	51.6 - 66.2	28.46	17.2	0.604	1.670	Non-parametric	36.93806	Modified-t UCL	66.2	*	66.2		66.2		
Benzoic Acid	11 / 14	79%	719 : 790	41.8 -	298	168.6	133.7	0.793	G/NP	252.9806	Approximate Gamma UCL			298		298		
Benzoic Acid (log-trans)														524	1011	298		
Bis(2-Chloroethyl)ether	4 / 15	27%	359 : 430	324 -	3460	606.1	1000.2	1.650	2.494	Non-parametric	1731.784	95% Chebyshev (Mean, Sd) UCL	3460	*	3460		3460	
Chrysene	7 / 14	50%	38.3 : 42.9	24.8 -	58.6	30.25	12.54	0.415	0.929	Non-parametric	36.32541	Modified-t UCL	58.6	*	58.6		58.6	
Fluoranthene	10 / 14	71%	38.3 : 42	32 -	65.6	38.89	15.87	0.408	0.210	Normal	46.40206	Student's-t UCL	67.0	80.4	65.6	86.5	65.6	
Phenanthrene	9 / 14	64%	38.3 : 42.9	22.9 -	83.2	31.15	16.57	0.532	2.644	G/NP	38.72714	Approximate Gamma UCL	83.2	*	83.2		83.2	
Pyrene	11 / 14	79%	38.3 : 42	24.8 -	171	60.54	40.79	0.674	1.496	G/NP	84.3404	Approximate Gamma UCL			171		171	
Pyrene (log-transformed)						3.901	0.671							161	277	171	370	161

Notes: 1. Sample SSRI17015000 is discarded for all compounds except Bis(2-chloroethyl)ether due to the extremely high detection limit for the other compounds in this sample.

2. For 15 samples, the non-parametric one-sided 95th percentile is the 15th ordered sample and for 14 samples, the 14th, i.e., the same as the maximum.

3. For 15 samples, the non-parametric 95% UCL on the mean is the 11th ordered sample; for 14 samples is the 10th.

4. The Student-t value for 15-1 = 14 degrees of freedom and 95% level of confidence is 1.761; for 13 df is 1.771.

5. The factor for a one-sided 95% coverage, 95% tolerance limit for 15 samples is 2.566; for 14 samples is 2.614.

6. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

7. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

8. The mean and standard deviation are computed with NDs replaced with DL/2.

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_a_anthracene
Raw Statistics			
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.625782
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.874
Minimum	17.95	Data not normal at 5% significance level	
Maximum	33.2		
Mean	21.51429	95% UCL (Assuming Normal Distribution)	
Median	19.775	Student's-t UCL	23.69806
Standard Deviation	4.613918		
Variance	21.28824	Gamma Distribution Test	
Coefficient of Variation	0.214458	A-D Test Statistic	2.21384
Skewness	2.151761	A-D 5% Critical Value	0.733685
		K-S Test Statistic	0.338836
		K-S 5% Critical Value	0.228201
Gamma Statistics			
k hat	28.96415	Data do not follow gamma distribution	
k star (bias corrected)	22.80516	at 5% significance level	
Theta hat	0.74279		
Theta star	0.943395	95% UCLs (Assuming Gamma Distribution)	
nu hat	810.9961	Approximate Gamma UCL	23.6488
nu star	638.5446	Adjusted Gamma UCL	23.94953
Approx.Chi Square Value (.05)	580.9102		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	573.6158	Shapiro-Wilk Test Statistic	0.672993
		Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics			
Minimum of log data	2.88759	Data not lognormal at 5% significance level	
Maximum of log data	3.50255		
Mean of log data	3.051355	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.183544	95% H-UCL	23.57746
Variance of log data	0.033688	95% Chebyshev (MVUE) UCL	26.0881
		97.5% Chebyshev (MVUE) UCL	28.08335
		99% Chebyshev (MVUE) UCL	32.00263
		95% Non-parametric UCLs	
		CLT UCL	23.54259
		Adj-CLT UCL (Adjusted for skewness)	24.30032
		Mod-t UCL (Adjusted for skewness)	23.81625
		Jackknife UCL	23.69806
		Standard Bootstrap UCL	23.48676
		Bootstrap-t UCL	30.23781
		Hall's Bootstrap UCL	36.62034
		Percentile Bootstrap UCL	23.55357
		BCA Bootstrap UCL	24.38214
RECOMMENDATION			
Data are Non-parametric (0.05)			
Use Student's-t UCL or Modified-t UCL			
		95% Chebyshev (Mean, Sd) UCL	26.88934
		97.5% Chebyshev (Mean, Sd) UCL	29.21513
		99% Chebyshev (Mean, Sd) UCL	33.78369

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_a_pyrene
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.354689
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.874
Minimum	18.85	Data not normal at 5% significance level	
Maximum	220		
Mean	36	95% UCL (Assuming Normal Distribution)	
Median	19.85	Student's-t UCL	61.17033
Standard Deviation	53.18029		
Variance	2828.143	Gamma Distribution Test	
Coefficient of Variation	1.47723	A-D Test Statistic	3.608627
Skewness	3.689396	A-D 5% Critical Value	0.750033
Gamma Statistics		K-S Test Statistic	0.41045
k hat	1.565371	K-S 5% Critical Value	0.232587
k star (bias corrected)	1.277554	Data do not follow gamma distribution	
Theta hat	22.99774	at 5% significance level	
Theta star	28.17885	95% UCLs (Assuming Gamma Distribution)	
nu hat	43.8304	Approximate Gamma UCL	55.78985
nu star	35.7715	Adjusted Gamma UCL	59.24367
Approx.Chi Square Value (.05)	23.08259	Lognormal Distribution Test	
Adjusted Level of Significance	0.03122	Shapiro-Wilk Test Statistic	0.484
Adjusted Chi Square Value	21.73691	Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	2.936513	95% UCLs (Assuming Lognormal Distribution)	
Maximum of log data	5.393628	95% H-UCL	47.03178
Mean of log data	3.231287	95% Chebyshev (MVUE) UCL	54.93249
Standard Deviation of log data	0.648788	97.5% Chebyshev (MVUE) UCL	65.41813
Variance of log data	0.420926	99% Chebyshev (MVUE) UCL	86.01514
RECOMMENDATION			
Data are Non-parametric (0.05)			
Use 95% Chebyshev (Mean, Sd) UCL			
		95% Non-parametric UCLs	
		CLT UCL	59.37835
		Adj-CLT UCL (Adjusted for skewness)	74.35306
		Mod-t UCL (Adjusted for skewness)	63.50608
		Jackknife UCL	61.17033
		Standard Bootstrap UCL	59.42574
		Bootstrap-t UCL	400.8438
		Hall's Bootstrap UCL	346.2925
		Percentile Bootstrap UCL	63.88214
		BCA Bootstrap UCL	78.60357
		95% Chebyshev (Mean, Sd) UCL	97.95316
		97.5% Chebyshev (Mean, Sd) UCL	124.7603
		99% Chebyshev (Mean, Sd) UCL	177.4179

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzo_b_fluoranthene
Raw Statistics			
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.584491
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.874
Minimum	18.85	Data not normal at 5% significance level	
Maximum	66.2		
Mean	28.45714	95% UCL (Assuming Normal Distribution)	
Median	19.85	Student's-t UCL	36.59626
Standard Deviation	17.19645		
Variance	295.718	Gamma Distribution Test	
Coefficient of Variation	0.604293	A-D Test Statistic	2.895572
Skewness	1.669609	A-D 5% Critical Value	0.73962
		K-S Test Statistic	0.437282
		K-S 5% Critical Value	0.229653
Gamma Statistics			
k hat	4.238318	Data do not follow gamma distribution	
k star (bias corrected)	3.377726	at 5% significance level	
Theta hat	6.714254		
Theta star	8.424942	95% UCLs (Assuming Gamma Distribution)	
nu hat	118.6729	Approximate Gamma UCL	36.79615
nu star	94.57632	Adjusted Gamma UCL	38.09698
Approx.Chi Square Value (.05)	73.14276		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	70.64529	Shapiro-Wilk Test Statistic	0.606488
		Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics			
Minimum of log data	2.936513	Data not lognormal at 5% significance level	
Maximum of log data	4.19268		
Mean of log data	3.225814	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.469172	95% H-UCL	36.73479
Variance of log data	0.220122	95% Chebyshev (MVUE) UCL	43.47443
		97.5% Chebyshev (MVUE) UCL	50.22916
		99% Chebyshev (MVUE) UCL	63.49753
		95% Non-parametric UCLs	
		CLT UCL	36.0168
		Adj-CLT UCL (Adjusted for skewness)	38.20812
		Mod-t UCL (Adjusted for skewness)	36.93806
		Jackknife UCL	36.59626
		Standard Bootstrap UCL	35.84582
		Bootstrap-t UCL	41.23319
		Hall's Bootstrap UCL	33.60475
		Percentile Bootstrap UCL	36.24643
		BCA Bootstrap UCL	37.41786
RECOMMENDATION			
Data are Non-parametric (0.05)			
Use Student's-t UCL or Modified-t UCL			
		95% Chebyshev (Mean, Sd) UCL	48.49041
		97.5% Chebyshev (Mean, Sd) UCL	57.15881
		99% Chebyshev (Mean, Sd) UCL	74.18622

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Benzoic Acid
Raw Statistics			
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.815422
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.874
Minimum	41.8	Data not normal at 5% significance level	
Maximum	395		
Mean	168.5714	95% UCL (Assuming Normal Distribution)	
Median	101.8	Student's-t UCL	231.8742
Standard Deviation	133.7472		
Variance	17888.31	Gamma Distribution Test	
Coefficient of Variation	0.793415	A-D Test Statistic	0.625933
Skewness	0.864241	A-D 5% Critical Value	0.747798
Gamma Statistics			
k hat	1.802078	Data follow gamma distribution	
k star (bias corrected)	1.463538	at 5% significance level	
Theta hat	93.54278		
Theta star	115.1808	95% UCLs (Assuming Gamma Distribution)	
nu hat	50.4582	Approximate Gamma UCL	252.9806
nu star	40.97906	Adjusted Gamma UCL	267.4234
Approx.Chi Square Value (.05)	27.30605		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	25.83132	Shapiro-Wilk Test Statistic	0.90932
Log-transformed Statistics			
Minimum of log data	3.732896	Shapiro-Wilk 5% Critical Value	0.874
Maximum of log data	5.978886	Data are lognormal at 5% significance level	
Mean of log data	4.824941		
Standard Deviation of log data	0.816243	95% UCLs (Assuming Lognormal Distribution)	
Variance of log data	0.666253	95% H-UCL	306.7995
		95% Chebyshev (MVUE) UCL	339.4434
		97.5% Chebyshev (MVUE) UCL	413.3196
		99% Chebyshev (MVUE) UCL	558.4351
RECOMMENDATION			
Data follow gamma distribution (0.05)		95% Non-parametric UCLs	
		CLT UCL	227.3674
		Adj-CLT UCL (Adjusted for skewness)	236.1895
		Mod-t UCL (Adjusted for skewness)	233.2503
		Jackknife UCL	231.8742
		Standard Bootstrap UCL	224.4028
		Bootstrap-t UCL	249.7263
		Hall's Bootstrap UCL	221.5089
		Percentile Bootstrap UCL	225.8357
		BCA Bootstrap UCL	226.5286
		95% Chebyshev (Mean, Sd) UCL	324.3822
		97.5% Chebyshev (Mean, Sd) UCL	391.8016
		99% Chebyshev (Mean, Sd) UCL	524.234

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Bis(2-Chloroethyl)ether
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.483001
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	179.5	Data not normal at 5% significance level	
Maximum	3460		
Mean	606.1	95% UCL (Assuming Normal Distribution)	
Median	198.5	Student's-t UCL	1060.958
Standard Deviation	1000.197		
Variance	1000393	Gamma Distribution Test	
Coefficient of Variation	1.650217	A-D Test Statistic	3.341572
Skewness	2.493766	A-D 5% Critical Value	0.768487
		K-S Test Statistic	0.408939
Gamma Statistics		K-S 5% Critical Value	0.228959
k hat	0.887068	Data do not follow gamma distribution	
k star (bias corrected)	0.754099	at 5% significance level	
Theta hat	683.2621		
Theta star	803.7407	95% UCLs (Assuming Gamma Distribution)	
nu hat	26.61204	Approximate Gamma UCL	1070.835
nu star	22.62297	Adjusted Gamma UCL	1152.029
Approx.Chi Square Value (.05)	12.80476		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	11.90229	Shapiro-Wilk Test Statistic	0.590876
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	5.190175		
Maximum of log data	8.149024	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.746818	95% H-UCL	991.7149
Standard Deviation of log data	0.961911	95% Chebyshev (MVUE) UCL	1038.9
Variance of log data	0.925273	97.5% Chebyshev (MVUE) UCL	1282.008
		99% Chebyshev (MVUE) UCL	1759.545
95% Non-parametric UCLs			
		CLT UCL	1030.883
		Adj-CLT UCL (Adjusted for skewness)	1208.559
		Mod-t UCL (Adjusted for skewness)	1088.672
		Jackknife UCL	1060.958
		Standard Bootstrap UCL	999.724
		Bootstrap-t UCL	4582.934
		Hall's Bootstrap UCL	5366.183
RECOMMENDATION		Percentile Bootstrap UCL	1068.3
Data are Non-parametric (0.05)		BCA Bootstrap UCL	1249.467
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1731.784
		97.5% Chebyshev (Mean, Sd) UCL	2218.868
		99% Chebyshev (Mean, Sd) UCL	3175.651

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Chrysene	
Raw Statistics				
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.819395	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.874	
Minimum	19.15	Data not normal at 5% significance level		
Maximum	58.6			
Mean	30.25357	95% UCL (Assuming Normal Distribution)		
Median	23.125	Student's-t UCL	36.18682	
Standard Deviation	12.53586			
Variance	157.1479	Gamma Distribution Test		
Coefficient of Variation	0.41436	A-D Test Statistic	1.098944	
Skewness	0.928695	A-D 5% Critical Value	0.73662	
		K-S Test Statistic	0.267115	
		K-S 5% Critical Value	0.229053	
Gamma Statistics				
k hat	6.979178	Data do not follow gamma distribution		
k star (bias corrected)	5.531259	at 5% significance level		
Theta hat	4.334833			
Theta star	5.469563	95% UCLs (Assuming Gamma Distribution)		
nu hat	195.417	Approximate Gamma UCL	36.86446	
nu star	154.8752	Adjusted Gamma UCL	37.85814	
Approx.Chi Square Value (.05)	127.1015			
Adjusted Level of Significance	0.03122	Lognormal Distribution Test		
Adjusted Chi Square Value	123.7655	Shapiro-Wilk Test Statistic	0.835248	
		Shapiro-Wilk 5% Critical Value	0.874	
		Data not lognormal at 5% significance level		
Minimum of log data	2.952303			
Maximum of log data	4.070735	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.336265	95% H-UCL	37.55173	
Standard Deviation of log data	0.389506	95% Chebyshev (MVUE) UCL	44.08158	
Variance of log data	0.151715	97.5% Chebyshev (MVUE) UCL	50.10728	
		99% Chebyshev (MVUE) UCL	61.94361	
		95% Non-parametric UCLs		
		CLT UCL	35.76441	
		Adj-CLT UCL (Adjusted for skewness)	36.65295	
		Mod-t UCL (Adjusted for skewness)	36.32541	
		Jackknife UCL	36.18682	
		Standard Bootstrap UCL	35.577	
		Bootstrap-t UCL	37.35467	
		Hall's Bootstrap UCL	36.63421	
		Percentile Bootstrap UCL	35.79286	
		BCA Bootstrap UCL	36.01429	
RECOMMENDATION				
Data are Non-parametric (0.05)		95% Chebyshev (Mean, Sd) UCL	44.85741	
Use Student's-t UCL or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	51.1765	
		99% Chebyshev (Mean, Sd) UCL	63.58914	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable: Fluoranthene		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.927709
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.874
Minimum	19.15	Data are normal at 5% significance level	
Maximum	65.6		
Mean	38.88929	95% UCL (Assuming Normal Distribution)	
Median	37.05	Student's-t UCL	46.40206
Standard Deviation	15.87312		
Variance	251.9558	Gamma Distribution Test	
Coefficient of Variation	0.408162	A-D Test Statistic	0.449677
Skewness	0.209909	A-D 5% Critical Value	0.73728
		K-S Test Statistic	0.176313
		K-S 5% Critical Value	0.229177
Gamma Statistics			
k hat	6.025968	Data follow gamma distribution	
k star (bias corrected)	4.782308	at 5% significance level	
Theta hat	6.453616		
Theta star	8.131907	95% UCLs (Assuming Gamma Distribution)	
nu hat	168.7271	Approximate Gamma UCL	48.1433
nu star	133.9046	Adjusted Gamma UCL	49.54812
Approx.Chi Square Value (.05)	108.1657		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	105.099	Shapiro-Wilk Test Statistic	0.903566
		Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.952303		
Maximum of log data	4.183576	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.575456	95% H-UCL	50.42578
Standard Deviation of log data	0.440721	95% Chebyshev (MVUE) UCL	59.56176
Variance of log data	0.194235	97.5% Chebyshev (MVUE) UCL	68.43285
		99% Chebyshev (MVUE) UCL	85.85837
		95% Non-parametric UCLs	
		CLT UCL	45.8672
		Adj-CLT UCL (Adjusted for skewness)	46.1215
		Mod-t UCL (Adjusted for skewness)	46.44173
		Jackknife UCL	46.40206
		Standard Bootstrap UCL	45.71558
		Bootstrap-t UCL	46.8643
		Hall's Bootstrap UCL	45.9902
		Percentile Bootstrap UCL	45.50357
		BCA Bootstrap UCL	46.18214
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	57.38091
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	65.38225
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	81.09933

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Phenanthrene
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.676418
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.874
Minimum	19.15	Data not normal at 5% significance level	
Maximum	83.2		
Mean	31.15	95% UCL (Assuming Normal Distribution)	
Median	26.15	Student's-t UCL	38.99419
Standard Deviation	16.57335		
Variance	274.6758	Gamma Distribution Test	
Coefficient of Variation	0.53205	A-D Test Statistic	0.888963
Skewness	2.643868	A-D 5% Critical Value	0.737434
		K-S Test Statistic	0.187942
		K-S 5% Critical Value	0.229206
Gamma Statistics			
k hat	5.80348	Data follow approximate gamma distribution	
k star (bias corrected)	4.607496	at 5% significance level	
Theta hat	5.367469		
Theta star	6.760722	95% UCLs (Assuming Gamma Distribution)	
nu hat	162.4974	Approximate Gamma UCL	38.72714
nu star	129.0099	Adjusted Gamma UCL	39.88047
Approx.Chi Square Value (.05)	103.7685		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	100.7676	Shapiro-Wilk Test Statistic	0.848166
		Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics			Data not lognormal at 5% significance level
Minimum of log data	2.952303		
Maximum of log data	4.421247	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.350192	95% H-UCL	38.55987
Standard Deviation of log data	0.401457	95% Chebyshev (MVUE) UCL	45.34456
Variance of log data	0.161168	97.5% Chebyshev (MVUE) UCL	51.67611
		99% Chebyshev (MVUE) UCL	64.11322
			95% Non-parametric UCLs
		CLT UCL	38.43574
		Adj-CLT UCL (Adjusted for skewness)	41.78001
		Mod-t UCL (Adjusted for skewness)	39.51583
		Jackknife UCL	38.99419
		Standard Bootstrap UCL	38.18555
		Bootstrap-t UCL	46.37502
		Hall's Bootstrap UCL	67.17776
		Percentile Bootstrap UCL	38.73214
		BCA Bootstrap UCL	41.52143
RECOMMENDATION			
Assuming gamma distribution (0.05)		95% Chebyshev (Mean, Sd) UCL	50.45736
Use Approximate Gamma UCL		97.5% Chebyshev (Mean, Sd) UCL	58.81167
		99% Chebyshev (Mean, Sd) UCL	75.2221

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bacl Variable:	Pyrene	
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.850862
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.874
Minimum	19.15	Data not normal at 5% significance level	
Maximum	171		
Mean	60.54286	95% UCL (Assuming Normal Distribution)	
Median	54.65	Student's-t UCL	79.85089
Standard Deviation	40.79433		
Variance	1664.178	Gamma Distribution Test	
Coefficient of Variation	0.673809	A-D Test Statistic	0.378941
Skewness	1.495841	A-D 5% Critical Value	0.743792
		K-S Test Statistic	0.136746
		K-S 5% Critical Value	0.230925
Gamma Statistics			
k hat	2.626898	Data follow gamma distribution	
k star (bias corrected)	2.11161	at 5% significance level	
Theta hat	23.04728		
Theta star	28.67142	95% UCLs (Assuming Gamma Distribution)	
nu hat	73.55314	Approximate Gamma UCL	84.3404
nu star	59.12509	Adjusted Gamma UCL	88.22891
Approx.Chi Square Value (.05)	42.44231		
Adjusted Level of Significance	0.03122	Lognormal Distribution Test	
Adjusted Chi Square Value	40.57175	Shapiro-Wilk Test Statistic	0.933309
		Shapiro-Wilk 5% Critical Value	0.874
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.952303		
Maximum of log data	5.141664	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.901101	95% H-UCL	95.11497
Standard Deviation of log data	0.671206	95% Chebyshev (MVUE) UCL	110.5593
Variance of log data	0.450517	97.5% Chebyshev (MVUE) UCL	132.094
		99% Chebyshev (MVUE) UCL	174.3947
		95% Non-parametric UCLs	
		CLT UCL	78.47628
		Adj-CLT UCL (Adjusted for skewness)	83.13361
		Mod-t UCL (Adjusted for skewness)	80.57734
		Jackknife UCL	79.85089
		Standard Bootstrap UCL	77.81534
		Bootstrap-t UCL	86.91555
		Hall's Bootstrap UCL	99.88316
RECOMMENDATION		Percentile Bootstrap UCL	79.225
Data follow gamma distribution (0.05)		BCA Bootstrap UCL	81.6
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	108.0668
		97.5% Chebyshev (Mean, Sd) UCL	128.6305
		99% Chebyshev (Mean, Sd) UCL	169.0238

Table 14
Summary Statistics
Forest Soils by 8310

Parameter	Frequency of Detection	Percent Detected	Range of NonDects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL
SVOCs (UG/KG)																
Benz[a]anthracene	1 / 15	7%	1.91 : 21.5	25.2 - 25.2	9.28	5.79	0.624		Poisson				16	25.2		16
Benz[a]pyrene	1 / 15	7%	1.91 : 21.5	12 - 12	8.57	3.59	0.419		Poisson				15.5	12		12
Fluoranthene	11 / 15	73%	1.91 : 42.4	16.3 - 48.4	23.45	13.14	0.560	0.429	Normal	29.42402	Student's-t UCL	46.6	57.2	48.4	62.9	46.6
Phenanthrene	7 / 15	47%	19.1 : 215	14.4 - 39.6	53.4	41.4	0.775	0.354	Non-parametric	99.99801	95% Chebyshev (Mean, Sd) UCL	107.5	*	39.6		39.6
Pyrene	10 / 15	67%	1.91 : 21	20.1 - 69.4	29.05	21.58	0.743	0.190	Normal	38.86243	Student's-t UCL	67.1	84.4	69.4	93.8	67.1

Notes: 1. For 15 samples, the non-parametric 95th percentile is the 15th ordered sample, i.e., the same as the maximum.

2. For 15 samples, the non-parametric one-sided 95% UCL on the mean is the 11th ordered sample.

3. The Student's-t value for 15-1 = 14 degrees of freedom and 95% level of confidence is 1.761.

4. The factor for a 95% coverage, 95% one-sided tolerance limit for 15 samples is 2.566.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. The mean and standard deviation are computed with NDs replaced with DL/2.

7. Shaded cell highlights an ordered value that is a 1/2DL value.

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable: Fluoranthene T SW846 83		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.957338
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.955	Data are normal at 5% significance level	
Maximum	48.4		
Mean	23.447	95% UCL (Assuming Normal Distribution)	
Median	20.2	Student's-t UCL	29.42402
Standard Deviation	13.143		
Variance	172.7384	Gamma Distribution Test	
Coefficient of Variation	0.560541	A-D Test Statistic	0.531697
Skewness	0.429482	A-D 5% Critical Value	0.746512
		K-S Test Statistic	0.195177
Gamma Statistics		K-S 5% Critical Value	0.224208
k hat	2.140874	Data follow gamma distribution	
k star (bias corrected)	1.757144	at 5% significance level	
Theta hat	10.95207		
Theta star	13.34381	95% UCLs (Assuming Gamma Distribution)	
nu hat	64.22623	Approximate Gamma UCL	33.37521
nu star	52.71431	Adjusted Gamma UCL	34.89656
Approx.Chi Square Value (.05)	37.03325		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	35.41875	Shapiro-Wilk Test Statistic	0.761212
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.046044		
Maximum of log data	3.8795	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.903374	95% H-UCL	55.19126
Standard Deviation of log data	0.939952	95% Chebyshev (MVUE) UCL	58.56436
Variance of log data	0.883511	97.5% Chebyshev (MVUE) UCL	72.10701
		99% Chebyshev (MVUE) UCL	98.70891
95% Non-parametric UCLs			
		CLT UCL	29.02882
		Adj-CLT UCL (Adjusted for skewness)	29.43092
		Mod-t UCL (Adjusted for skewness)	29.48674
		Jackknife UCL	29.42402
		Standard Bootstrap UCL	28.82795
		Bootstrap-t UCL	30.21649
		Hall's Bootstrap UCL	29.45988
RECOMMENDATION		Percentile Bootstrap UCL	28.76
Data are normal (0.05)		BCA Bootstrap UCL	29.04333
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	38.23896
		97.5% Chebyshev (Mean, Sd) UCL	44.63945
		99% Chebyshev (Mean, Sd) UCL	57.21197

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1 Variable:	Phenanthrene	T	SW846 83
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.786033	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	9.55	Data not normal at 5% significance level		
Maximum	107.5			
Mean	53.40333	95% UCL (Assuming Normal Distribution)		
Median	35.2	Student's-t UCL	72.23095	
Standard Deviation	41.40046			
Variance	1713.998	Gamma Distribution Test		
Coefficient of Variation	0.775241	A-D Test Statistic	1.003128	
Skewness	0.354147	A-D 5% Critical Value	0.753213	
		K-S Test Statistic	0.251087	
		K-S 5% Critical Value	0.225414	
Gamma Statistics				
k hat	1.541525	Data do not follow gamma distribution		
k star (bias corrected)	1.277665	at 5% significance level		
Theta hat	34.64318			
Theta star	41.79761	95% UCLs (Assuming Gamma Distribution)		
nu hat	46.24576	Approximate Gamma UCL	81.39244	
nu star	38.32994	Adjusted Gamma UCL	85.86431	
Approx.Chi Square Value (.05)	25.1491			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	23.83932	Shapiro-Wilk Test Statistic	0.863685	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics				
Minimum of log data	2.256541	Data not lognormal at 5% significance level		
Maximum of log data	4.677491			
Mean of log data	3.619711	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.926662	95% H-UCL	109.9771	
Variance of log data	0.858702	95% Chebyshev (MVUE) UCL	117.5668	
		97.5% Chebyshev (MVUE) UCL	144.5531	
		99% Chebyshev (MVUE) UCL	197.5626	
95% Non-parametric UCLs				
		CLT UCL	70.98608	
		Adj-CLT UCL (Adjusted for skewness)	72.03051	
		Mod-t UCL (Adjusted for skewness)	72.39386	
		Jackknife UCL	72.23095	
		Standard Bootstrap UCL	70.85276	
		Bootstrap-t UCL	74.05691	
		Hall's Bootstrap UCL	69.59772	
RECOMMENDATION				
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	70.39	
		BCA Bootstrap UCL	71.70667	
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	99.99801	
		97.5% Chebyshev (Mean, Sd) UCL	120.1596	
		99% Chebyshev (Mean, Sd) UCL	159.763	

General Statistics

Data File	W:\W2-mfg\Nuclear Metals RI FS EECA\Bac1	Variable:	Pyrene	T	SW846 8310
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic			0.94306
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value			0.881
Minimum	0.955	Data are normal at 5% significance level			
Maximum	69.4				
Mean	29.05033	95% UCL (Assuming Normal Distribution)			
Median	29.3	Student's-t UCL			
Standard Deviation	21.57603				
Variance	465.5249	Gamma Distribution Test			
Coefficient of Variation	0.742712	A-D Test Statistic			0.932708
Skewness	0.19028	A-D 5% Critical Value			0.766288
		K-S Test Statistic			0.199736
		K-S 5% Critical Value			0.22854
k hat	0.932575	Data follow approximate gamma distribution			
k star (bias corrected)	0.790504	at 5% significance level			
Theta hat	31.15067				
Theta star	36.74912	95% UCLs (Assuming Gamma Distribution)			
nu hat	27.97724	Approximate Gamma UCL			
nu star	23.71513	50.54336			
Approx. Chi Square Value (.05)	13.63052	Adjusted Gamma UCL			
Adjusted Level of Significance	0.03235	54.26396			
Adjusted Chi Square Value	12.69595	Lognormal Distribution Test			
		Shapiro-Wilk Test Statistic			0.775059
		Shapiro-Wilk 5% Critical Value			0.881
Log-transformed Statistics		Data not lognormal at 5% significance level			
Minimum of log data	-0.046044				
Maximum of log data	4.239887	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	2.744891	95% H-UCL			
Standard Deviation of log data	1.536264	229.3839			
Variance of log data	2.360108	95% Chebyshev (MVUE) UCL			
		130.5147			
		97.5% Chebyshev (MVUE) UCL			
		168.0159			
		99% Chebyshev (MVUE) UCL			
		241.6796			
95% Non-parametric UCLs					
		CLT UCL			
		38.21366			
		Adj-CLT UCL (Adjusted for skewness)			
		38.50611			
		Mod-t UCL (Adjusted for skewness)			
		38.90804			
		Jackknife UCL			
		38.86243			
		Standard Bootstrap UCL			
		37.98026			
		Bootstrap-t UCL			
		38.75601			
		Hall's Bootstrap UCL			
		38.77573			
RECOMMENDATION		Percentile Bootstrap UCL			
Data are normal (0.05)		37.737			
		BCA Bootstrap UCL			
		37.72067			
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL			
		53.33335			
		97.5% Chebyshev (Mean, Sd) UCL			
		63.84063			
		99% Chebyshev (Mean, Sd) UCL			
		84.48015			

Table 15
Summary Statistics
Forest Soils, Metals.

Parameter	Frequency of Detection	Percent Detected	Range of NonDects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean + 3 SD	Recommended UL
Metals (MG/KG except as noted)																
Aluminum	15 / 15	100%	:	8490 - 16500	12368	2436.3	0.197	-0.042	Normal	13475.96	Student's-t UCL	16658	18620	16500	19677	16500
Arsenic	15 / 15	100%	:	4 - 14.1	8.71	2.81	0.323	0.631	Normal	9.985282	Student's-t UCL	13.7	15.9	14.1	17.1	13.7
Barium	10 / 15	67%	11.8 - 15.7	16.5 - 26.3	15.9	7.2	0.453	-0.265	Normal	19.17691	Student's-t UCL	28.6	34.4	26.3	37.5	26.3
Beryllium	15 / 15	100%	:	0.23 - 0.46	0.38	0.07	0.184	-0.782	Normal	0.411968	Student's-t UCL	0.50	0.56	0.46	0.59	0.46
Cadmium	2 / 15	13%	0.069 - 0.13	0.1 - 0.13	0.056	0.026	0.464	2.032	G/NP	0.067707	Approximate Gamma UCL	0.13	*	0.13		0.13
Calcium	15 / 15	100%	:	203 - 600	357.4	130.5	0.365	0.687	G/NP	423.2865	Approximate Gamma UCL	600	*	600		600
Chromium	15 / 15	100%	:	12.1 - 22.7	16.08	3.3	0.205	0.410	Normal	17.58282	Student's-t UCL	21.9	24.6	22.7	26.0	21.9
Cobalt	15 / 15	100%	:	1.4 - 4.3	2.79	0.94	0.337	0.408	Normal	3.222866	Student's-t UCL	4.45	5.22	4.30	5.61	4.3
Iron	15 / 15	100%	:	9070 - 15900	11640	2183.7	0.188	0.430	Normal	12633.08	Student's-t UCL	15485	17243	15900	18191	15485
Lead	15 / 15	100%	:	9.6 - 58.2	25.03	12.86	0.514	1.192	Normal	30.6795	Student's-t UCL	47.7	58.0	58.2	63.6	47.7
Magnesium	15 / 15	100%	:	1530 - 4220	2298.7	680.3	0.296	1.682	G/NP	2615.594	Approximate Gamma UCL	4220	*	4220		4220
Manganese	15 / 15	100%	:	46.1 - 241	93.23	47.6	0.511	2.329	G/NP	114.8991	Approximate Gamma UCL	241	*	241		241
Mercury (UG/KG)	13 / 15	87%	19.9 - 21.4	27.9 - 70.8	45.46	19.05	0.419	-0.628	Normal	54.12785	Student's-t UCL	79.0	94.4	70.8	102.6	70.8
Molybdenum (UG/KG)	15 / 15	100%	:	417 - 1220	587.2	198.4	0.338	2.587	Non-parametric	683.1194	Modified-t UCL	1220	*	1220		1220
Nickel	15 / 15	100%	:	6.1 - 14.4	9.81	1.97	0.201	0.504	Normal	10.70811	Student's-t UCL	13.3	14.9	14.4	15.7	13.3
Potassium	15 / 15	100%	:	335 - 1530	640.4	334.6	0.522	1.489	G/NP	805.218	Approximate Gamma UCL	1530		1530		1530
Silver	15 / 15	100%	:	0.022 - 0.11	0.051	0.022	0.431	1.330	Normal	0.061547	Student's-t UCL	0.090	0.108	0.110	0.117	0.09
Thorium (UG/KG)	15 / 15	100%	:	3570 - 7590	5142	1255.8	0.244	0.302	Normal	5713.098	Student's-t UCL	7353	8364	7590	8909	7353
Titanium (UG/KG)	15 / 15	100%	:	303000 - 661000	470933	108782	0.231	0.465	Normal	520403.9	Student's-t UCL	662498	750068	661000	797279	661000
Uranium	15 / 15	100%	:	0.67 - 1.3	1	0.257	0.257	-0.072	G/NP	1.136482	Approximate Gamma UCL	1.3	*	1.30		1.3
Vanadium	15 / 15	100%	:	14.4 - 29.7	19.68	3.63	0.184	1.376	Normal	21.32887	Student's-t UCL	26.1	29.0	29.7	30.6	26.1

Notes: 1. For 15 samples, the non-parametric 95th percentile is the 15th ordered sample, i.e., the same as the maximum.

2. For 15 samples, the non-parametric one-sided 95% UCL on the mean is the 11th ordered sample.

3. The Student-t value for 15-1 = 14 degrees of freedom and 95% level of confidence is 1.761.

4. The factor for a one-sided 95% coverage, 95% tolerance limit for 15 samples is 2.566.

5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.

6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.

7. The mean and standard deviation are computed with NDs replaced with DL/2.

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Aluminum	T	SW846 3050E
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	15	Shapiro-Wilk Test Statistic		0.958514
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value		0.881
Minimum	8490	Data are normal at 5% significance level		
Maximum	16500			
Mean	12368	95% UCL (Assuming Normal Distribution)		
Median	12600	Student's-t UCL		13475.96
Standard Deviation	2436.321			
Variance	5935660	Gamma Distribution Test		
Coefficient of Variation	0.196986	A-D Test Statistic		0.332252
Skewness	-0.042241	A-D 5% Critical Value		0.734613
		K-S Test Statistic		0.139096
Gamma Statistics		K-S 5% Critical Value		0.221141
k hat	26.69651	Data follow gamma distribution		
k star (bias corrected)	21.40165	at 5% significance level		
Theta hat	463.2815			
Theta star	577.8992	95% UCLs (Assuming Gamma Distribution)		
nu hat	800.8954	Approximate Gamma UCL		13591.47
nu star	642.0496	Adjusted Gamma UCL		13751.21
Approx.Chi Square Value (.05)	584.2541			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	577.4668	Shapiro-Wilk Test Statistic		0.94992
		Shapiro-Wilk 5% Critical Value		0.881
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	9.046644			
Maximum of log data	9.711116	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	9.404022	95% H-UCL		13671.04
Standard Deviation of log data	0.203213	95% Chebyshev (MVUE) UCL		15217.89
Variance of log data	0.041296	97.5% Chebyshev (MVUE) UCL		16448.89
		99% Chebyshev (MVUE) UCL		18866.94
		95% Non-parametric UCLs		
		CLT UCL		13402.7
		Adj-CLT UCL (Adjusted for skewness)		13395.37
		Mod-t UCL (Adjusted for skewness)		13474.82
		Jackknife UCL		13475.96
		Standard Bootstrap UCL		13385.31
		Bootstrap-t UCL		13490.69
		Hall's Bootstrap UCL		13345.65
RECOMMENDATION		Percentile Bootstrap UCL		13368
Data are normal (0.05)		BCA Bootstrap UCL		13327.33
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		15109.99
		97.5% Chebyshev (Mean, Sd) UCL		16296.45
		99% Chebyshev (Mean, Sd) UCL		18627.02

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable: Arsenic T SW846 3050B/6		
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.934354
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	4	Data are normal at 5% significance level	
Maximum	14.1		
Mean	8.706667	95% UCL (Assuming Normal Distribution)	
Median	7.7	Student's-t UCL	9.985282
Standard Deviation	2.811575		
Variance	7.904952	Gamma Distribution Test	
Coefficient of Variation	0.322922	A-D Test Statistic	0.329779
Skewness	0.63145	A-D 5% Critical Value	0.737286
		K-S Test Statistic	0.144831
Gamma Statistics		K-S 5% Critical Value	0.221498
k hat	10.38094	Data follow gamma distribution	
k star (bias corrected)	8.3492	at 5% significance level	
Theta hat	0.838716		
Theta star	1.042814	95% UCLs (Assuming Gamma Distribution)	
nu hat	311.4283	Approximate Gamma UCL	10.15156
nu star	250.476	Adjusted Gamma UCL	10.3473
Approx.Chi Square Value (.05)	214.8253		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	210.7614	Shapiro-Wilk Test Statistic	0.955717
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	1.386294		
Maximum of log data	2.646175	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.115151	95% H-UCL	10.33558
Standard Deviation of log data	0.327641	95% Chebyshev (MVUE) UCL	11.9727
Variance of log data	0.107349	97.5% Chebyshev (MVUE) UCL	13.38214
		99% Chebyshev (MVUE) UCL	16.1507
95% Non-parametric UCLs			
CLT UCL			
Adj-CLT UCL (Adjusted for skewness)			
Mod-t UCL (Adjusted for skewness)			
Jackknife UCL			
Standard Bootstrap UCL			
Bootstrap-t UCL			
Hall's Bootstrap UCL			
Percentile Bootstrap UCL			
BCA Bootstrap UCL			
95% Chebyshev (Mean, Sd) UCL			
97.5% Chebyshev (Mean, Sd) UCL			
99% Chebyshev (Mean, Sd) UCL			
RECOMMENDATION			
Data are normal (0.05)			
Use Student's-t UCL			

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Barium	T	SW846 3050B/60
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.882835	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	5.9	Data are normal at 5% significance level		
Maximum	26.3			
Mean	15.9	95% UCL (Assuming Normal Distribution)		
Median	17.8	Student's-t UCL	19.17691	
Standard Deviation	7.205677			
Variance	51.92179	Gamma Distribution Test		
Coefficient of Variation	0.453187	A-D Test Statistic	1.051224	
Skewness	-0.264796	A-D 5% Critical Value	0.739761	
		K-S Test Statistic	0.261331	
		K-S 5% Critical Value	0.222465	
Gamma Statistics				
k hat	4.181508	Data do not follow gamma distribution		
k star (bias corrected)	3.389651	at 5% significance level		
Theta hat	3.802456			
Theta star	4.690748	95% UCLs (Assuming Gamma Distribution)		
nu hat	125.4452	Approximate Gamma UCL	20.35876	
nu star	101.6895	Adjusted Gamma UCL	20.99889	
Approx.Chi Square Value (.05)	79.41856			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	76.99757	Shapiro-Wilk Test Statistic	0.82898	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics				
Minimum of log data	1.774952	Data not lognormal at 5% significance level		
Maximum of log data	3.269569			
Mean of log data	2.642006	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.550671	95% H-UCL	22.33526	
Variance of log data	0.303239	95% Chebyshev (MVUE) UCL	26.52555	
		97.5% Chebyshev (MVUE) UCL	31.01246	
		99% Chebyshev (MVUE) UCL	39.82614	
		95% Non-parametric UCLs		
		CLT UCL	18.96025	
		Adj-CLT UCL (Adjusted for skewness)	18.82433	
		Mod-t UCL (Adjusted for skewness)	19.15571	
		Jackknife UCL	19.17691	
		Standard Bootstrap UCL	18.82814	
		Bootstrap-t UCL	18.96983	
		Hall's Bootstrap UCL	18.66975	
		Percentile Bootstrap UCL	18.64667	
		BCA Bootstrap UCL	18.64667	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	24.00972	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	27.51881	
		99% Chebyshev (Mean, Sd) UCL	34.41172	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Beryllium	T	SW846 3050B/
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.91653	
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	0.23	Data are normal at 5% significance level		
Maximum	0.46			
Mean	0.379333	95% UCL (Assuming Normal Distribution)		
Median	0.4	Student's-t UCL	0.411968	
Standard Deviation	0.07176			
Variance	0.00515	Gamma Distribution Test		
Coefficient of Variation	0.189174	A-D Test Statistic	0.582122	
Skewness	-0.781688	A-D 5% Critical Value	0.734615	
		K-S Test Statistic	0.166329	
		K-S 5% Critical Value	0.221143	
Gamma Statistics				
k hat	26.4376	Data follow gamma distribution		
k star (bias corrected)	21.19452	at 5% significance level		
Theta hat	0.014348			
Theta star	0.017898	95% UCLs (Assuming Gamma Distribution)		
nu hat	793.1279	Approximate Gamma UCL	0.417055	
nu star	635.8356	Adjusted Gamma UCL	0.421981	
Approx.Chi Square Value (.05)	578.3262			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	571.5741	Shapiro-Wilk Test Statistic	0.881767	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-1.469676			
Maximum of log data	-0.776529	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.988372	95% H-UCL	0.421004	
Standard Deviation of log data	0.209046	95% Chebyshev (MVUE) UCL	0.469711	
Variance of log data	0.0437	97.5% Chebyshev (MVUE) UCL	0.508598	
		99% Chebyshev (MVUE) UCL	0.584984	
		95% Non-parametric UCLs		
		CLT UCL	0.40981	
		Adj-CLT UCL (Adjusted for skewness)	0.405814	
		Mod-t UCL (Adjusted for skewness)	0.411344	
		Jackknife UCL	0.411968	
		Standard Bootstrap UCL	0.408765	
		Bootstrap-t UCL	0.408084	
		Hall's Bootstrap UCL	0.406522	
		Percentile Bootstrap UCL	0.407333	
		BCA Bootstrap UCL	0.404	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	0.460097	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.495043	
		99% Chebyshev (Mean, Sd) UCL	0.563689	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Cadmium	T	SW846 3050B
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.741508		
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881		
Minimum	0.0345	Data not normal at 5% significance level			
Maximum	0.13				
Mean	0.0557	95% UCL (Assuming Normal Distribution)			
Median	0.0445	Student's-t UCL	0.067757		
Standard Deviation	0.026511				
Variance	0.000703	Gamma Distribution Test			
Coefficient of Variation	0.475966	A-D Test Statistic	0.975045		
Skewness	2.031914	A-D 5% Critical Value	0.73819		
Gamma Statistics		K-S Test Statistic	0.19641		
k hat	6.550497	K-S 5% Critical Value	0.221903		
k star (bias corrected)	5.284842	Data follow approximate gamma distribution at 5% significance level			
Theta hat	0.008503				
Theta star	0.01054	95% UCLs (Assuming Gamma Distribution)			
nu hat	196.5149	Approximate Gamma UCL	0.067707		
nu star	158.5453	Adjusted Gamma UCL	0.069376		
Approx.Chi Square Value (.05)	130.43				
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	127.2919	Shapiro-Wilk Test Statistic	0.862192		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881		
Minimum of log data	-3.366796	Data not lognormal at 5% significance level			
Maximum of log data	-2.040221				
Mean of log data	-2.966043	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.381958	95% H-UCL	0.067618		
Variance of log data	0.145892	95% Chebyshev (MVUE) UCL	0.079245		
		97.5% Chebyshev (MVUE) UCL	0.089683		
		99% Chebyshev (MVUE) UCL	0.110188		
95% Non-parametric UCLs					
		CLT UCL	0.066959		
		Adj-CLT UCL (Adjusted for skewness)	0.070797		
		Mod-t UCL (Adjusted for skewness)	0.068355		
		Jackknife UCL	0.067757		
		Standard Bootstrap UCL	0.066453		
		Bootstrap-t UCL	0.081175		
RECOMMENDATION					
Assuming gamma distribution (0.05)		Hall's Bootstrap UCL	0.12608		
Use Approximate Gamma UCL		Percentile Bootstrap UCL	0.067367		
		BCA Bootstrap UCL	0.072567		
		95% Chebyshev (Mean, Sd) UCL	0.085538		
		97.5% Chebyshev (Mean, Sd) UCL	0.098448		
		99% Chebyshev (Mean, Sd) UCL	0.123809		

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Calcium	T	SW846 3050B/6
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.879428	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	203	Data not normal at 5% significance level		
Maximum	600			
Mean	357.4	95% UCL (Assuming Normal Distribution)		
Median	283	Student's-t UCL	416.7411	
Standard Deviation	130.4863			
Variance	17026.69	Gamma Distribution Test		
Coefficient of Variation	0.365099	A-D Test Statistic	0.678282	
Skewness	0.687405	A-D 5% Critical Value	0.737712	
		K-S Test Statistic	0.239913	
		K-S 5% Critical Value	0.221668	
Gamma Statistics				
k hat	8.613342	Data follow approximate gamma distribution		
k star (bias corrected)	6.935118	at 5% significance level		
Theta hat	41.49377			
Theta star	51.53481	95% UCLs (Assuming Gamma Distribution)		
nu hat	258.4003	Approximate Gamma UCL	423.2865	
nu star	208.0535	Adjusted Gamma UCL	432.2995	
Approx.Chi Square Value (.05)	175.669			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	172.0065	Shapiro-Wilk Test Statistic	0.915828	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics				
Minimum of log data	5.313206	Data are lognormal at 5% significance level		
Maximum of log data	6.39693			
Mean of log data	5.819684	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.351764	95% H-UCL	429.4557	
Variance of log data	0.123738	95% Chebyshev (MVUE) UCL	500.2709	
		97.5% Chebyshev (MVUE) UCL	562.3437	
		99% Chebyshev (MVUE) UCL	684.2736	
		95% Non-parametric UCLs		
		CLT UCL	412.8175	
		Adj-CLT UCL (Adjusted for skewness)	419.207	
		Mod-t UCL (Adjusted for skewness)	417.7377	
		Jackknife UCL	416.7411	
		Standard Bootstrap UCL	410.3521	
		Bootstrap-t UCL	431.8752	
		Hall's Bootstrap UCL	412.0376	
RECOMMENDATION				
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	417.5333	
		BCA Bootstrap UCL	419.8	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	504.2575	
		97.5% Chebyshev (Mean, Sd) UCL	567.8029	
		99% Chebyshev (Mean, Sd) UCL	692.6255	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Chromium	T	SW846 3050E
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.925797	
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	12.1	Data are normal at 5% significance level		
Maximum	22.7			
Mean	16.08	95% UCL (Assuming Normal Distribution)		
Median	15.9	Student's-t UCL	17.58282	
Standard Deviation	3.304586			
Variance	10.92029	Gamma Distribution Test		
Coefficient of Variation	0.205509	A-D Test Statistic	0.457946	
Skewness	0.409866	A-D 5% Critical Value	0.734619	
		K-S Test Statistic	0.186481	
		K-S 5% Critical Value	0.221147	
Gamma Statistics				
k hat	25.82494	Data follow gamma distribution		
k star (bias corrected)	20.7044	at 5% significance level		
Theta hat	0.622654			
Theta star	0.776647	95% UCLs (Assuming Gamma Distribution)		
nu hat	774.7482	Approximate Gamma UCL	17.69929	
nu star	621.1319	Adjusted Gamma UCL	17.91094	
Approx.Chi Square Value (.05)	564.3051			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	557.6369	Shapiro-Wilk Test Statistic	0.9247	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.493205			
Maximum of log data	3.122365	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.75809	95% H-UCL	17.77268	
Standard Deviation of log data	0.203985	95% Chebyshev (MVUE) UCL	19.78965	
Variance of log data	0.04161	97.5% Chebyshev (MVUE) UCL	21.39546	
		99% Chebyshev (MVUE) UCL	24.54976	
		95% Non-parametric UCLs		
		CLT UCL	17.48346	
		Adj-CLT UCL (Adjusted for skewness)	17.57994	
		Mod-t UCL (Adjusted for skewness)	17.59787	
		Jackknife UCL	17.58282	
		Standard Bootstrap UCL	17.41888	
		Bootstrap-t UCL	17.67864	
		Hall's Bootstrap UCL	17.56311	
		Percentile Bootstrap UCL	17.44	
		BCA Bootstrap UCL	17.42667	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	19.79919	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	21.40848	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	24.56963	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Cobalt	T	SW846 3050B/60
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.929318	
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	1.4	Data are normal at 5% significance level		
Maximum	4.3			
Mean	2.793333	95% UCL (Assuming Normal Distribution)		
Median	2.7	Student's-t UCL	3.222866	
Standard Deviation	0.944508			
Variance	0.892095	Gamma Distribution Test		
Coefficient of Variation	0.338129	A-D Test Statistic	0.283104	
Skewness	0.408159	A-D 5% Critical Value	0.737547	
		K-S Test Statistic	0.12527	
		K-S 5% Critical Value	0.221587	
Gamma Statistics				
k hat	9.321725	Data follow gamma distribution		
k star (bias corrected)	7.501824	at 5% significance level		
Theta hat	0.299658			
Theta star	0.372354	95% UCLs (Assuming Gamma Distribution)		
nu hat	279.6517	Approximate Gamma UCL	3.285794	
nu star	225.0547	Adjusted Gamma UCL	3.352875	
Approx.Chi Square Value (.05)	191.3245			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	187.4967	Shapiro-Wilk Test Statistic	0.956812	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0.336472			
Maximum of log data	1.458615	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.97264	95% H-UCL	3.352344	
Standard Deviation of log data	0.345595	95% Chebyshev (MVUE) UCL	3.899802	
Variance of log data	0.119436	97.5% Chebyshev (MVUE) UCL	4.377426	
		99% Chebyshev (MVUE) UCL	5.315624	
		95% Non-parametric UCLs		
		CLT UCL	3.194465	
		Adj-CLT UCL (Adjusted for skewness)	3.221927	
		Mod-t UCL (Adjusted for skewness)	3.227149	
		Jackknife UCL	3.222866	
		Standard Bootstrap UCL	3.181558	
		Bootstrap-t UCL	3.252238	
		Hall's Bootstrap UCL	3.209576	
		Percentile Bootstrap UCL	3.186667	
		BCA Bootstrap UCL	3.226667	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	3.856342	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	4.316307	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	5.219818	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Iron	T	SW846 3050B/6020
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.912321	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	9070	Data are normal at 5% significance level		
Maximum	15900			
Mean	11640	95% UCL (Assuming Normal Distribution)		
Median	12300	Student's-t UCL	12633.08	
Standard Deviation	2183.712			
Variance	4768600	Gamma Distribution Test		
Coefficient of Variation	0.187604	A-D Test Statistic	0.58042	
Skewness	0.43008	A-D 5% Critical Value	0.734582	
Gamma Statistics				
k hat	31.1488	Data follow gamma distribution		
k star (bias corrected)	24.96348	at 5% significance level		
Theta hat	373.6902			
Theta star	466.2811	95% UCLs (Assuming Gamma Distribution)		
nu hat	934.4639	Approximate Gamma UCL	12700.14	
nu star	748.9044	Adjusted Gamma UCL	12837.94	
Approx.Chi Square Value (.05)	686.3902			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	679.0223	Shapiro-Wilk Test Statistic	0.914146	
Log-transformed Statistics				
Minimum of log data	9.112728	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	9.674074	Data are lognormal at 5% significance level		
Mean of log data	9.346065			
Standard Deviation of log data	0.185249	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.034317	95% H-UCL	12737.53	
		95% Chebyshev (MVUE) UCL	14075.67	
		97.5% Chebyshev (MVUE) UCL	15130.28	
		99% Chebyshev (MVUE) UCL	17201.87	
95% Non-parametric UCLs				
		CLT UCL	12567.42	
		Adj-CLT UCL (Adjusted for skewness)	12634.32	
		Mod-t UCL (Adjusted for skewness)	12643.52	
		Jackknife UCL	12633.08	
		Standard Bootstrap UCL	12519.16	
		Bootstrap-t UCL	12728.22	
		Hall's Bootstrap UCL	12629.23	
		Percentile Bootstrap UCL	12597.33	
		BCA Bootstrap UCL	12624	
RECOMMENDATION				
Data are normal (0.05)				
Use Student's-t UCL				
		95% Chebyshev (Mean, Sd) UCL	14097.69	
		97.5% Chebyshev (Mean, Sd) UCL	15161.13	
		99% Chebyshev (Mean, Sd) UCL	17250.06	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Lead	T	SW846 3050B/602
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.914459	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	9.6	Data are normal at 5% significance level		
Maximum	58.2			
Mean	25.03333	95% UCL (Assuming Normal Distribution)		
Median	21.6	Student's-t UCL	30.8795	
Standard Deviation	12.85527			
Variance	165.2581	Gamma Distribution Test		
Coefficient of Variation	0.513526	A-D Test Statistic	0.149887	
Skewness	1.192157	A-D 5% Critical Value	0.739413	
		K-S Test Statistic	0.092951	
		K-S 5% Critical Value	0.222354	
Gamma Statistics				
k hat	4.417085	Data follow gamma distribution		
k star (bias corrected)	3.578112	at 5% significance level		
Theta hat	5.667388			
Theta star	6.996241	95% UCLs (Assuming Gamma Distribution)		
nu hat	132.5125	Approximate Gamma UCL	31.82802	
nu star	107.3434	Adjusted Gamma UCL	32.79927	
Approx.Chi Square Value (.05)	84.42757			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	81.92751	Shapiro-Wilk Test Statistic	0.982039	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.261763			
Maximum of log data	4.063885	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.102762	95% H-UCL	33.44314	
Standard Deviation of log data	0.504784	95% Chebyshev (MVUE) UCL	39.71197	
Variance of log data	0.254807	97.5% Chebyshev (MVUE) UCL	46.05698	
		99% Chebyshev (MVUE) UCL	58.52053	
		95% Non-parametric UCLs		
		CLT UCL	30.49296	
		Adj-CLT UCL (Adjusted for skewness)	31.58466	
		Mod-t UCL (Adjusted for skewness)	31.04979	
		Jackknife UCL	30.8795	
		Standard Bootstrap UCL	30.36062	
		Bootstrap-t UCL	32.18035	
		Hall's Bootstrap UCL	34.18877	
		Percentile Bootstrap UCL	30.64667	
		BCA Bootstrap UCL	31.06	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	39.50147	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	45.76184	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	58.05913	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Magnesium	T	SW846 3050
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.85105	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	1530	Data not normal at 5% significance level		
Maximum	4220			
Mean	2298.667	95% UCL (Assuming Normal Distribution)		
Median	2220	Student's-t UCL	2608.057	
Standard Deviation	680.3242			
Variance	462841	Gamma Distribution Test		
Coefficient of Variation	0.295965	A-D Test Statistic	0.451828	
Skewness	1.682354	A-D 5% Critical Value	0.736163	
		K-S Test Statistic	0.206436	
		K-S 5% Critical Value	0.221366	
Gamma Statistics				
k hat	14.4939	Data follow gamma distribution		
k star (bias corrected)	11.63956	at 5% significance level		
Theta hat	158.5955			
Theta star	197.4874	95% UCLs (Assuming Gamma Distribution)		
nu hat	434.817	Approximate Gamma UCL	2615.594	
nu star	349.1869	Adjusted Gamma UCL	2657.883	
Approx.Chi Square Value (.05)	306.8764			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	301.9938	Shapiro-Wilk Test Statistic	0.937664	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics				
Minimum of log data	7.333023	Data are lognormal at 5% significance level		
Maximum of log data	8.34759			
Mean of log data	7.705191	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.26486	95% H-UCL	2621.668	
Variance of log data	0.070151	95% Chebyshev (MVUE) UCL	2983.381	
		97.5% Chebyshev (MVUE) UCL	3281.867	
		99% Chebyshev (MVUE) UCL	3868.184	
		95% Non-parametric UCLs		
		CLT UCL	2587.6	
		Adj-CLT UCL (Adjusted for skewness)	2669.131	
		Mod-t UCL (Adjusted for skewness)	2620.774	
		Jackknife UCL	2608.057	
		Standard Bootstrap UCL	2583.418	
		Bootstrap-t UCL	2794.233	
		Hall's Bootstrap UCL	4076.086	
		Percentile Bootstrap UCL	2600	
		BCA Bootstrap UCL	2684	
RECOMMENDATION				
Data follow gamma distribution (0.05)				
Use Approximate Gamma UCL				
		95% Chebyshev (Mean, Sd) UCL	3064.346	
		97.5% Chebyshev (Mean, Sd) UCL	3395.656	
		99% Chebyshev (Mean, Sd) UCL	4046.451	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Manganese	T	SW846 3050
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.75867	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	46.1	Data not normal at 5% significance level		
Maximum	241			
Mean	93.22667	95% UCL (Assuming Normal Distribution)		
Median	84.4	Student's-t UCL	114.875	
Standard Deviation	47.60305			
Variance	2266.051	Gamma Distribution Test		
Coefficient of Variation	0.510616	A-D Test Statistic	0.595631	
Skewness	2.328894	A-D 5% Critical Value	0.738376	
Gamma Statistics		K-S Test Statistic	0.195462	
k hat	5.749497	K-S 5% Critical Value	0.221995	
k star (bias corrected)	4.644042	Data follow gamma distribution at 5% significance level		
Theta hat	16.21475			
Theta star	20.07447	95% UCLs (Assuming Gamma Distribution)		
nu hat	172.4849	Approximate Gamma UCL	114.8991	
nu star	139.3213	Adjusted Gamma UCL	117.9379	
Approx.Chi Square Value (.05)	113.0423			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	110.1296	Shapiro-Wilk Test Statistic	0.931522	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881	
Minimum of log data	3.830813	Data are lognormal at 5% significance level		
Maximum of log data	5.484797			
Mean of log data	4.445556	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.413335	95% H-UCL	115.5572	
Variance of log data	0.170846	95% Chebyshev (MVUE) UCL	136.1206	
		97.5% Chebyshev (MVUE) UCL	155.0879	
		99% Chebyshev (MVUE) UCL	192.3454	
95% Non-parametric UCLs				
		CLT UCL	113.4437	
		Adj-CLT UCL (Adjusted for skewness)	121.3409	
		Mod-t UCL (Adjusted for skewness)	116.1068	
		Jackknife UCL	114.875	
		Standard Bootstrap UCL	112.7857	
		Bootstrap-t UCL	132.2446	
		Hall's Bootstrap UCL	205.0403	
		Percentile Bootstrap UCL	113.96	
		BCA Bootstrap UCL	123.92	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	146.8021	
Data follow gamma distribution (0.05)		97.5% Chebyshev (Mean, Sd) UCL	169.9843	
Use Approximate Gamma UCL		99% Chebyshev (Mean, Sd) UCL	215.5211	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Mercury	T	SW846 7471A
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic		0.936933	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value		0.881	
Minimum	9.95	Data are normal at 5% significance level			
Maximum	70.8				
Mean	45.46333	95% UCL (Assuming Normal Distribution)			
Median	48.6	Student's-t UCL		54.12785	
Standard Deviation	19.0526				
Variance	363.0016	Gamma Distribution Test			
Coefficient of Variation	0.419076	A-D Test Statistic		0.823255	
Skewness	-0.628184	A-D 5% Critical Value		0.740263	
Gamma Statistics		K-S Test Statistic		0.170555	
k hat	3.947899	K-S 5% Critical Value		0.222588	
k star (bias corrected)	3.202764	Data follow approximate gamma distribution at 5% significance level			
Theta hat	11.51583				
Theta star	14.19503	95% UCLs (Assuming Gamma Distribution)			
nu hat	118.437	Approximate Gamma UCL		58.6583	
nu star	96.08291	Adjusted Gamma UCL		60.56161	
Approx.Chi Square Value (.05)	74.46942				
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	72.12902	Shapiro-Wilk Test Statistic		0.795921	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.881	
Minimum of log data	2.297573	Data not lognormal at 5% significance level			
Maximum of log data	4.259859				
Mean of log data	3.684943	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.610286	95% H-UCL		68.64226	
Variance of log data	0.372449	95% Chebyshev (MVUE) UCL		81.2079	
		97.5% Chebyshev (MVUE) UCL		95.87166	
		99% Chebyshev (MVUE) UCL		124.6758	
		95% Non-parametric UCLs			
		CLT UCL		53.55496	
		Adj-CLT UCL (Adjusted for skewness)		52.70239	
		Mod-t UCL (Adjusted for skewness)		53.99487	
		Jackknife UCL		54.12785	
		Standard Bootstrap UCL		53.00419	
		Bootstrap-t UCL		53.44988	
RECOMMENDATION		Hall's Bootstrap UCL		52.34671	
Data are normal (0.05)		Percentile Bootstrap UCL		52.82667	
Use Student's-t UCL		BCA Bootstrap UCL		52.32667	
		95% Chebyshev (Mean, Sd) UCL		66.90633	
		97.5% Chebyshev (Mean, Sd) UCL		76.18473	
		99% Chebyshev (Mean, Sd) UCL		94.41035	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Molybdenum	T	SW846 305
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic		0.707878	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value		0.881	
Minimum	417	Data not normal at 5% significance level			
Maximum	1220				
Mean	587.2	95% UCL (Assuming Normal Distribution)			
Median	525	Student's-t UCL		677.4174	
Standard Deviation	198.381				
Variance	39355.03	Gamma Distribution Test			
Coefficient of Variation	0.337842	A-D Test Statistic		0.989493	
Skewness	2.586825	A-D 5% Critical Value		0.736577	
Gamma Statistics		K-S Test Statistic		0.237066	
k hat	12.9767	K-S 5% Critical Value		0.221415	
k star (bias corrected)	10.4258	Data do not follow gamma distribution			
Theta hat	45.25033	at 5% significance level			
Theta star	56.32179	95% UCLs (Assuming Gamma Distribution)			
nu hat	389.301	Approximate Gamma UCL		673.2574	
nu star	312.7741	Adjusted Gamma UCL		684.7947	
Approx.Chi Square Value (.05)	272.7946				
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	268.1986	Shapiro-Wilk Test Statistic		0.842363	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.881	
Minimum of log data	6.033086	Data not lognormal at 5% significance level			
Maximum of log data	7.106606				
Mean of log data	6.33634	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.26934	95% H-UCL		669.3963	
Variance of log data	0.072544	95% Chebyshev (MVUE) UCL		762.8395	
		97.5% Chebyshev (MVUE) UCL		840.1674	
		99% Chebyshev (MVUE) UCL		992.063	
95% Non-parametric UCLs					
		CLT UCL		671.4523	
		Adj-CLT UCL (Adjusted for skewness)		708.0081	
		Mod-t UCL (Adjusted for skewness)		683.1194	
		Jackknife UCL		677.4174	
		Standard Bootstrap UCL		668.2375	
		Bootstrap-t UCL		772.1317	
		Hall's Bootstrap UCL		1020.855	
		Percentile Bootstrap UCL		676.0667	
		BCA Bootstrap UCL		711.8	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL		810.4705	
Data are Non-parametric (0.05)		97.5% Chebyshev (Mean, Sd) UCL		907.0798	
Use Student's-t UCL or Modified-t UCL		99% Chebyshev (Mean, Sd) UCL		1096.85	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Nickel	T	SW846 3050B/60
Raw Statistics					
Number of Valid Samples	15	Normal Distribution Test			
Number of Unique Samples	14	Shapiro-Wilk Test Statistic	0.961189		
Minimum	6.1	Shapiro-Wilk 5% Critical Value	0.881		
Maximum	14.4	Data are normal at 5% significance level			
Mean	9.813333	95% UCL (Assuming Normal Distribution)			
Median	9.9	Student's-t UCL	10.70811		
Standard Deviation	1.967546				
Variance	3.871238	Gamma Distribution Test			
Coefficient of Variation	0.200497	A-D Test Statistic	0.271959		
Skewness	0.503801	A-D 5% Critical Value	0.734613		
		K-S Test Statistic	0.152038		
		K-S 5% Critical Value	0.221141		
Gamma Statistics					
k hat	26.68089	Data follow gamma distribution			
k star (bias corrected)	21.38915	at 5% significance level			
Theta hat	0.367804				
Theta star	0.458799	95% UCLs (Assuming Gamma Distribution)			
nu hat	800.4266	Approximate Gamma UCL	10.78439		
nu star	641.6746	Adjusted Gamma UCL	10.91119		
Approx.Chi Square Value (.05)	583.8963				
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	577.1111	Shapiro-Wilk Test Statistic	0.967721		
		Shapiro-Wilk 5% Critical Value	0.881		
Log-transformed Statistics					
Minimum of log data	1.808289	Data are lognormal at 5% significance level			
Maximum of log data	2.667228				
Mean of log data	2.264885	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.202495	95% H-UCL	10.84147		
Variance of log data	0.041004	95% Chebyshev (MVUE) UCL	12.06474		
		97.5% Chebyshev (MVUE) UCL	13.03784		
		99% Chebyshev (MVUE) UCL	14.9493		
95% Non-parametric UCLs					
		CLT UCL	10.64895		
		Adj-CLT UCL (Adjusted for skewness)	10.71956		
		Mod-t UCL (Adjusted for skewness)	10.71912		
		Jackknife UCL	10.70811		
		Standard Bootstrap UCL	10.61672		
		Bootstrap-t UCL	10.83027		
		Hall's Bootstrap UCL	10.96959		
		Percentile Bootstrap UCL	10.63333		
		BCA Bootstrap UCL	10.63333		
RECOMMENDATION					
Data are normal (0.05)					
Use Student's-t UCL					
		95% Chebyshev (Mean, Sd) UCL	12.02773		
		97.5% Chebyshev (Mean, Sd) UCL	12.98591		
		99% Chebyshev (Mean, Sd) UCL	14.86805		

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Potassium	T	SW846 3050E				
Raw Statistics									
Number of Valid Samples	15	Normal Distribution Test							
Number of Unique Samples	15	Shapiro-Wilk Test Statistic		0.832692					
Minimum	335	Shapiro-Wilk 5% Critical Value		0.881					
Maximum	1530	Data not normal at 5% significance level							
Mean	640.4	95% UCL (Assuming Normal Distribution)							
Median	550	Student's-t UCL		792.5858					
Standard Deviation	334.6448								
Variance	111987.1	Gamma Distribution Test							
Coefficient of Variation	0.522556	A-D Test Statistic		0.608044					
Skewness	1.489269	A-D 5% Critical Value		0.738798					
Gamma Statistics									
k hat	4.832532	K-S Test Statistic		0.180746					
k star (bias corrected)	3.91047	K-S 5% Critical Value		0.222159					
Theta hat	132.5185	Data follow gamma distribution							
Theta star	163.7655	at 5% significance level							
nu hat	144.9759	95% UCLs (Assuming Gamma Distribution)							
nu star	117.3141	Approximate Gamma UCL		805.218					
Approx.Chi Square Value (.05)	93.30138	Adjusted Gamma UCL		828.616					
Adjusted Level of Significance	0.03235								
Adjusted Chi Square Value	90.66678	Lognormal Distribution Test							
Log-transformed Statistics									
Minimum of log data	5.814131	Shapiro-Wilk Test Statistic		0.918338					
Maximum of log data	7.333023	Shapiro-Wilk 5% Critical Value		0.881					
Mean of log data	6.355074	Data are lognormal at 5% significance level							
Standard Deviation of log data	0.461871								
Variance of log data	0.213325	95% UCLs (Assuming Lognormal Distribution)							
		95% H-UCL		822.296					
		95% Chebyshev (MVUE) UCL		974.0092					
		97.5% Chebyshev (MVUE) UCL		1120.591					
		99% Chebyshev (MVUE) UCL		1408.524					
		95% Non-parametric UCLs							
		CLT UCL		782.5234					
		Adj-CLT UCL (Adjusted for skewness)		818.0249					
		Mod-t UCL (Adjusted for skewness)		798.1233					
		Jackknife UCL		792.5858					
		Standard Bootstrap UCL		783.6974					
		Bootstrap-t UCL		846.7913					
		Hall's Bootstrap UCL		860.8083					
		Percentile Bootstrap UCL		782.8667					
		BCA Bootstrap UCL		799.8667					
		95% Chebyshev (Mean, Sd) UCL		1017.03					
		97.5% Chebyshev (Mean, Sd) UCL		1179.998					
		99% Chebyshev (Mean, Sd) UCL		1500.118					
RECOMMENDATION									
Data follow gamma distribution (0.05)									
Use Approximate Gamma UCL									

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Silver T	SW846 3050B/602
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.900398
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.022	Data are normal at 5% significance level	
Maximum	0.11		
Mean	0.0514	95% UCL (Assuming Normal Distribution)	
Median	0.045	Student's-t UCL	0.061547
Standard Deviation	0.022312		
Variance	0.000498	Gamma Distribution Test	
Coefficient of Variation	0.434087	A-D Test Statistic	0.248429
Skewness	1.330153	A-D 5% Critical Value	0.738212
Gamma Statistics		K-S Test Statistic	0.136456
k hat	6.457911	K-S 5% Critical Value	0.221914
k star (bias corrected)	5.210773	Data follow gamma distribution at 5% significance level	
Theta hat	0.007959		
Theta star	0.009864	95% UCLs (Assuming Gamma Distribution)	
nu hat	193.7373	Approximate Gamma UCL	0.062571
nu star	156.3232	Adjusted Gamma UCL	0.064125
Approx.Chi Square Value (.05)	128.4142		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	125.3015	Shapiro-Wilk Test Statistic	0.98655
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	-3.816713	Data are lognormal at 5% significance level	
Maximum of log data	-2.207275		
Mean of log data	-3.047535	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.408274	95% H-UCL	0.064017
Variance of log data	0.166687	95% Chebyshev (MVUE) UCL	0.075353
		97.5% Chebyshev (MVUE) UCL	0.085762
		99% Chebyshev (MVUE) UCL	0.106208
95% Non-parametric UCLs			
		CLT UCL	0.060876
		Adj-CLT UCL (Adjusted for skewness)	0.06299
		Mod-t UCL (Adjusted for skewness)	0.061877
		Jackknife UCL	0.061547
		Standard Bootstrap UCL	0.060617
		Bootstrap-t UCL	0.065474
		Hall's Bootstrap UCL	0.068124
		Percentile Bootstrap UCL	0.060933
		BCA Bootstrap UCL	0.062333
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	0.076511
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	0.087377
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	0.108721

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	Thorium	T	SW846 3050B/6
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic		0.921559	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value		0.881	
Minimum	3570	Data are normal at 5% significance level			
Maximum	7590				
Mean	5142	95% UCL (Assuming Normal Distribution)			
Median	5190	Student's-t UCL		5713.098	
Standard Deviation	1255.799				
Variance	1577031				
Coefficient of Variation	0.244224	Gamma Distribution Test			
Skewness	0.302232	A-D Test Statistic		0.55699	
Gamma Statistics		A-D 5% Critical Value		0.735206	
k hat	18.00075	K-S Test Statistic		0.187564	
k star (bias corrected)	14.44505	K-S 5% Critical Value		0.221254	
Theta hat	285.6547	Data follow gamma distribution			
Theta star	355.9697	at 5% significance level			
nu hat	540.0226	95% UCLs (Assuming Gamma Distribution)			
nu star	433.3515	Approximate Gamma UCL		5771.571	
Approx.Chi Square Value (.05)	386.0809	Adjusted Gamma UCL		5854.865	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	380.5883	Shapiro-Wilk Test Statistic		0.917711	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.881	
Minimum of log data	8.180321	Data are lognormal at 5% significance level			
Maximum of log data	8.934587	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	8.517164	95% H-UCL		5815.53	
Standard Deviation of log data	0.245782	95% Chebyshev (MVUE) UCL		6576.107	
Variance of log data	0.060409	97.5% Chebyshev (MVUE) UCL		7196.407	
		99% Chebyshev (MVUE) UCL		8414.866	
95% Non-parametric UCLs					
		CLT UCL		5675.337	
		Adj-CLT UCL (Adjusted for skewness)		5702.374	
		Mod-t UCL (Adjusted for skewness)		5717.315	
		Jackknife UCL		5713.098	
		Standard Bootstrap UCL		5662.333	
		Bootstrap-t UCL		5737.302	
		Hall's Bootstrap UCL		5712.814	
		Percentile Bootstrap UCL		5676.667	
		BCA Bootstrap UCL		5693.333	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL		6555.355	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL		7166.915	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL		8368.206	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Titanium	T	SW846 3050B/
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.940629	
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	303000	Data are normal at 5% significance level		
Maximum	661000			
Mean	470933.3	95% UCL (Assuming Normal Distribution)		
Median	473000	Student's-t UCL	520403.9	
Standard Deviation	108781.9			
Variance	1.2E+010	Gamma Distribution Test		
Coefficient of Variation	0.230992	A-D Test Statistic	0.295458	
Skewness	0.465166	A-D 5% Critical Value	0.734657	
		K-S Test Statistic	0.133217	
		K-S 5% Critical Value	0.221187	
Gamma Statistics				
k hat	20.44984	Data follow gamma distribution		
k star (bias corrected)	16.40431	at 5% significance level		
Theta hat	23028.71			
Theta star	28707.9	95% UCLs (Assuming Gamma Distribution)		
nu hat	613.4951	Approximate Gamma UCL	524727.8	
nu star	492.1294	Adjusted Gamma UCL	531812.5	
Approx.Chi Square Value (.05)	441.6769			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	435.793	Shapiro-Wilk Test Statistic	0.961478	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	12.62149			
Maximum of log data	13.40151	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	13.03782	95% H-UCL	527872.5	
Standard Deviation of log data	0.229837	95% Chebyshev (MVUE) UCL	593558.2	
Variance of log data	0.052825	97.5% Chebyshev (MVUE) UCL	646625.4	
		99% Chebyshev (MVUE) UCL	750865.4	
		95% Non-parametric UCLs		
		CLT UCL	517132.9	
		Adj-CLT UCL (Adjusted for skewness)	520737.5	
		Mod-t UCL (Adjusted for skewness)	520966.1	
		Jackknife UCL	520403.9	
		Standard Bootstrap UCL	515993.2	
		Bootstrap-t UCL	526209.1	
		Hall's Bootstrap UCL	520057.7	
		Percentile Bootstrap UCL	516800	
		BCA Bootstrap UCL	521466.7	
		95% Chebyshev (Mean, Sd) UCL	593363.3	
		97.5% Chebyshev (Mean, Sd) UCL	646338.8	
		99% Chebyshev (Mean, Sd) UCL	750399	
RECOMMENDATION				
Data are normal (0.05)				
Use Student's-t UCL				

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Uranium	T	SW846 3050B/6
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.838387	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	0.67	Data not normal at 5% significance level		
Maximum	1.3			
Mean	1.004	95% UCL (Assuming Normal Distribution)		
Median	1.1	Student's-t UCL	1.12083	
Standard Deviation	0.256899			
Variance	0.065997	Gamma Distribution Test		
Coefficient of Variation	0.255876	A-D Test Statistic	1.017234	
Skewness	-0.072277	A-D 5% Critical Value	0.735834	
		K-S Test Statistic	0.207344	
		K-S 5% Critical Value	0.221328	
Gamma Statistics				
k hat	15.69861	Data follow approximate gamma distribution		
k star (bias corrected)	12.60333	at 5% significance level		
Theta hat	0.063955			
Theta star	0.079661	95% UCLs (Assuming Gamma Distribution)		
nu hat	470.9584	Approximate Gamma UCL	1.136482	
nu star	378.1	Adjusted Gamma UCL	1.154102	
Approx.Chi Square Value (.05)	334.0242			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	328.9245	Shapiro-Wilk Test Statistic	0.839403	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-0.400478			
Maximum of log data	0.262364	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.028196	95% H-UCL	1.149049	
Standard Deviation of log data	0.265787	95% Chebyshev (MVUE) UCL	1.307972	
Variance of log data	0.070643	97.5% Chebyshev (MVUE) UCL	1.439192	
		99% Chebyshev (MVUE) UCL	1.696948	
		95% Non-parametric UCLs		
		CLT UCL	1.113105	
		Adj-CLT UCL (Adjusted for skewness)	1.111782	
		Mod-t UCL (Adjusted for skewness)	1.120623	
		Jackknife UCL	1.12083	
		Standard Bootstrap UCL	1.109767	
		Bootstrap-t UCL	1.115145	
		Hall's Bootstrap UCL	1.09928	
		Percentile Bootstrap UCL	1.114667	
		BCA Bootstrap UCL	1.102667	
		95% Chebyshev (Mean, Sd) UCL	1.29313	
		97.5% Chebyshev (Mean, Sd) UCL	1.418237	
		99% Chebyshev (Mean, Sd) UCL	1.663986	
RECOMMENDATION				
Assuming gamma distribution (0.05)				
Use Approximate Gamma UCL				

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Vanadium	T	SW846 3050E
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.897783	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	14.4	Data are normal at 5% significance level		
Maximum	29.7			
Mean	19.68	95% UCL (Assuming Normal Distribution)		
Median	19.2	Student's-t UCL	21.32887	
Standard Deviation	3.625741			
Variance	13.146	Gamma Distribution Test		
Coefficient of Variation	0.184235	A-D Test Statistic	0.323429	
Skewness	1.37596	A-D 5% Critical Value	0.734557	
Gamma Statistics		K-S Test Statistic	0.127483	
k hat	34.6895	K-S 5% Critical Value	0.221082	
k star (bias corrected)	27.79605	Data follow gamma distribution		
Theta hat	0.567319	at 5% significance level		
Theta star	0.708014	95% UCLs (Assuming Gamma Distribution)		
nu hat	1040.685	Approximate Gamma UCL	21.37237	
nu star	833.8814	Adjusted Gamma UCL	21.59171	
Approx.Chi Square Value (.05)	767.8507	Lognormal Distribution Test		
Adjusted Level of Significance	0.03235	Shapiro-Wilk Test Statistic	0.954052	
Adjusted Chi Square Value	760.0502	Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.667228			
Maximum of log data	3.391147	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.96512	95% H-UCL	21.39004	
Standard Deviation of log data	0.173012	95% Chebyshev (MVUE) UCL	23.51456	
Variance of log data	0.029933	97.5% Chebyshev (MVUE) UCL	25.17826	
		99% Chebyshev (MVUE) UCL	28.44628	
		95% Non-parametric UCLs		
		CLT UCL	21.21985	
		Adj-CLT UCL (Adjusted for skewness)	21.57523	
		Mod-t UCL (Adjusted for skewness)	21.3843	
		Jackknife UCL	21.32887	
		Standard Bootstrap UCL	21.17908	
		Bootstrap-t UCL	21.80534	
		Hall's Bootstrap UCL	22.85368	
		Percentile Bootstrap UCL	21.26667	
		BCA Bootstrap UCL	21.52667	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	23.76064	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	25.52633	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	28.9947	

Table 16
Summary Statistics
Conant Well Property Sediment

Parameter	Frequency of Detection	Percent Detected	Range of Non-Detects	Range of Detected Concentrations		Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean 3 SD +	Recommended UL
Semivolatile Organics (8270C) (ug/Kg)																	
Benzo[a]pyrene	3 / 10	30%	97 : 152	111	- 516	143	162.9	1.156	1.878	Non-Parametric	371	95% Chebyshev (Mean, Sd) UCL	516	*	516		516
Benzo[b]fluoranthene	4 / 10	40%	97 : 151	78.1	- 417	152	149.5	0.985	1.104	Non-Parametric	359	95% Chebyshev (Mean, Sd) UCL	417	*	417		417
Benzoic Acid	3 / 10	30%	1860 : 3020	3530	- 3970	1910	1350.8	0.675	0.983	Non-Parametric	3685	95% Chebyshev (Mean, Sd) UCL	3970	*	3970		3970
Bis(2-Ethylhexyl)phthalate	3 / 10	30%	495 : 996	481	- 531	422	161.4	0.249	-0.762	Non-Parametric	482	Student's-t UCL [a]	531	*	531		531
Chrysene	5 / 10	50%	97 : 151	62.8	- 119	76.3	34.7	0.359	0.391	Normal	92.2	Student's-t UCL	126	156	119	180	119
Fluoranthene	7 / 10	70%	99 : 151	61.5	- 176	92.5	47.1	0.432	1.184	Non-Parametric	116	Student's-t UCL [a]	176	*	176		176
Indeno[1,2,3-cd]pyrene	1 / 10	10%	93 : 152	532	- 532	107	145.7	1.401	3.126	Poisson					185	532	185
Phenanthrene	5 / 10	50%	97 : 151	53	- 87	60.7	22.8	0.237	1.053	Non-Parametric	69.3	Mod-t UCL (Adjusted for skewness)	87	*	87		87
Pyrene	9 / 10	90%	99 : 99	60.5	- 192	116	60.3	0.443	0.329	Normal	146	Student's-t UCL	211	267	192	297	192
Polyaromatic Hydrocarbons (8310) (ug/Kg)																	
Benzo[a]anthracene	5 / 6	83%	4.95 : 4.95	39.8	- 140	52.6	45.9			Normal			145	223	140	190	
Benzo[a]anthracene (outlier removed)	4 / 4	100%		39.8	- 49	43.3	19.8	0.102	0.748	Normal	48.5	Student's-t UCL	53.7	66.1	49	102.6	49
Benzo[a]pyrene	5 / 6	83%	16.1 : 16.1	19.6	- 38.5	26.0	14.2	0.433	-0.686	Normal	35.3	Student's-t UCL	48.8	67.8	38.5	68.8	38.5
Benzo[b]fluoranthene	1 / 6	17%	16.1 : 50.2	53.9	- 53.9	23.6	17.1	0.679	1.669	Non-Parametric	36.8	Student's-t UCL [a]	53.9	*	53.9		53.9
Chrysene	5 / 6	83%	4.95 : 4.95	34	- 118	45.4	38.4			Normal			123	187.9	118	161	
Chrysene (outlier removed)	4 / 4	100%		34	- 43.9	37.9	17.4	0.111	1.317	Normal	42.9	Student's-t UCL	47.8	59.6	43.9	90.0	43.9
Fluoranthene	6 / 6	100%		40	- 184	81.3				Lognormal					184		
Log-transformed						4.3	0.52			Lognormal			203	487	184	337	
Fluoranthene (outlier removed)	5 / 5	100%		40	- 72.4	60.7	27.9	0.235	-0.901	Normal	74.3	Student's-t UCL	91.1	121	72.4	144	72.4
Phenanthrene	6 / 6	100%		32.3	- 120	58.0	0.5	1.954	1.048	G/NP	92.0	Approximate Gamma UCL	120	*	120		120
Pyrene	6 / 6	100%		46.9	- 147	78.1				Lognormal					147		
Log-transformed						4.3	0.39			Lognormal			160	309	147	234	
Pyrene (outlier removed)	5 / 5	100%		46.9	- 76.4	64.3	28.5	0.192	-0.727	Normal	76.1	Student's-t UCL	91.1	116	76.4	150	76.4
Inorganics (mg/Kg)																	
Aluminum	10 / 10	100%		10900	- 27400	22000	4891	0.222	-1.420	Normal	24835	Student's-t UCL	30964	36236	27400	36672	27400
Arsenic	10 / 10	100%		3.8	- 9.8	7.61	2.10	0.276	-0.765	Normal	8.83	Student's-t UCL	11.5	13.7	9.8	13.9	9.8
Barium	10 / 10	100%		37.1	- 74.4	49.7	10.20			Normal			68.4	79.4	74.4	80.3	
Barium (outlier removed)	9 / 9	100%		37.1	- 54.2	47.0	5.67	0.121	-0.463	Normal	50.4	Student's-t UCL	57.3	64.1	54.2	64.0	54.2
Beryllium	10 / 10	100%		0.88	- 3.9	2.24	1.07	0.479	0.376	Normal	2.86	Student's-t UCL	4.20	5.36	3.9	5.45	3.9
Cadmium	9 / 10	90%	0.32 : 0.32	0.26	- 1	0.529	0.24	0.448	0.468	Normal	0.666	Student's-t UCL	0.97	1.22	1	1.25	0.97
Calcium	10 / 10	100%		1060	- 3310	1839	718	0.391	0.753	Normal	2255	Student's-t UCL	3156	3930	3310	3994	3156
Chromium	10 / 10	100%		13.9	- 29.7	23.0	4.38	0.191	-0.601	Normal	25.5	Student's-t UCL	31.0	35.7	29.7	36.1	29.7
Cobalt	10 / 10	100%		1.8	- 4.9	3.13	0.92	0.294	0.691	Normal	3.66	Student's-t UCL	4.82	5.8	4.9	5.89	4.82
Copper	5 / 10	50%	11.4 : 13.4	16.3	- 23.5	12.5	0.550	0.309	Non-Parametric	22.0	95% Chebyshev (Mean, Sd) UCL	23.5	*	23.5		23.5	
Iron	10 / 10	100%		3560	- 9520	6409	1816	0.283	0.427	Normal	7461	Student's-t UCL	9738	11694	9520	11857	9520
Lead	10 / 10	100%		52.7	- 300	99.8		0.753	2.547	Non-Parametric	203	95% Chebyshev (Mean, Sd) UCL	300	*	300		300
Magnesium	10 / 10	100%		1020	- 2710	1867	545	0.292	0.008	Normal	2183	Student's-t UCL	2866	3453	2710	3501	2710
Manganese	10 / 10	100%		37.3	- 84	61.6	14.33	0.232	0.041	Normal	69.9	Student's-t UCL	88	103	84	105	84
Mercury	10 / 10	100%		0.068	- 0.161	0.116	0.03	0.288	-0.257	Normal	0.135	Student's-t UCL	0.176	0.212	0.161	0.215	0.161
Molybdenum	10 / 10	100%		1.01	- 2.6	1.67	0.62	0.372	0.461	Normal	2.03	Student's-t UCL	2.81	3.47	2.6	3.53	2.6
Nickel	10 / 10	100%		9.2	- 17	14.0	2.26	0.162	-0.767	Normal	15.3	Student's-t UCL	18.2	20.6	17	20.8	17
Potassium	10 / 10	100%		430	- 751	595	87	0.146	-0.173	Normal	646	Student's-t UCL	755	849	751	857	751
Selenium	7 / 10	70%	1.1 : 2.4	2.5	- 4.2	2.43	1.18	0.488	-0.392	Normal	3.11	Student's-t UCL	4.59	5.87	4.2	5.97	4.2
Silver	10 / 10	100%		0.082	- 0.16	0.112	0.03	0.230	0.569	Normal	0.127	Student's-t UCL	0.159	0.186	0.16	0.190	0.159
Sodium	10 / 10	100%		629	- 2540	1070				Non-Parametric					2540		
Sodium (outlier removed)	9 / 9	100%	</														

Table 16
Summary Statistics
Conant Well Property Sediment

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean 3 SD	+ Recommended UL
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Notes: 1. For 5 samples, the non-parametric 95th percentile is the 5th ordered sample, i.e., the same as the maximum.
For 10 samples, the non-parametric 95th percentile is the 10th ordered sample, i.e., the same as the maximum
2. For 5 samples, the non-parametric one-sided 95% UCL on the mean is the 4th ordered sample.
For 10 samples, the non-parametric one-sided 95% UCL on the mean is the 8th ordered sample.
3. The Student-t value for 5-1 = 4 degrees of freedom and 95% level of confidence is 2.132.
The Student-t value for 10-1 = 9 degrees of freedom and 95% level of confidence is 1.833, for 8 df is 1.860.
4. The factor for a one-sided 95% coverage, 95% tolerance limit is 4.202.
The factor for a one-sided 95% coverage, 95% tolerance limit for 10 samples is 2.911, and for 9 samples 3.023.
5. * - To determine a one-sided 95/95 UTL for a non-parametric distribution requires more samples than available.
6. G/NP - PROUCL recommended a gamma distribution for determining the 95% UCL on the mean, other statistics generated assuming a non-parametric distribution.
7. The mean and standard deviation are computed with NDs replaced with DL/2.

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back\Variable:	SW846 3050B/6020	Aluminun
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.873568
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	10900	Data are normal at 5% significance level	
Maximum	27400		
Mean	22000	95% UCL (Assuming Normal Distribution)	
Median	23600	Student's-t UCL	24834.98
Standard Deviation	4890.581		
Variance	23917778	Gamma Distribution Test	
Coefficient of Variation	0.222299	A-D Test Statistic	0.753645
Skewness	-1.419872	A-D 5% Critical Value	0.724679
		K-S Test Statistic	0.239354
		K-S 5% Critical Value	0.266287
Gamma Statistics			
k hat	17.4646	Data follow approximate gamma distribution	
k star (bias corrected)	12.29189	at 5% significance level	
Theta hat	1259.691		
Theta star	1789.798	95% UCLs (Assuming Gamma Distribution)	
nu hat	349.2921	Approximate Gamma UCL	25689.6
nu star	245.8378	Adjusted Gamma UCL	26402.11
Approx.Chi Square Value (.05)	210.53		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	204.8484	Shapiro-Wilk Test Statistic	0.788285
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	9.296518		
Maximum of log data	10.2183	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	9.969895	95% H-UCL	26457.35
Standard Deviation of log data	0.271749	95% Chebyshev (MVUE) UCL	30417.01
Variance of log data	0.073848	97.5% Chebyshev (MVUE) UCL	34018.71
		99% Chebyshev (MVUE) UCL	41093.56
		95% Non-parametric UCLs	
		CLT UCL	24543.83
		Adj-CLT UCL (Adjusted for skewness)	23801.85
		Mod-t UCL (Adjusted for skewness)	24719.24
		Jackknife UCL	24834.98
		Standard Bootstrap UCL	24378.43
		Bootstrap-t UCL	24310.4
		Hall's Bootstrap UCL	23929.09
RECOMMENDATION		Percentile Bootstrap UCL	24180
Data are normal (0.05)		BCA Bootstrap UCL	23960
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	28741.2
		97.5% Chebyshev (Mean, Sd) UCL	31658.12
		99% Chebyshev (Mean, Sd) UCL	37387.85

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Arsenic
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.893516
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	3.8	Data are normal at 5% significance level	
Maximum	9.8		
Mean	7.61	95% UCL (Assuming Normal Distribution)	
Median	8.3	Student's-t UCL	8.826702
Standard Deviation	2.098915		
Variance	4.405444	Gamma Distribution Test	
Coefficient of Variation	0.27581	A-D Test Statistic	0.610031
Skewness	-0.764608	A-D 5% Critical Value	0.724949
		K-S Test Statistic	0.223717
		K-S 5% Critical Value	0.26653
Gamma Statistics			
k hat	12.17904	Data follow gamma distribution	
k star (bias corrected)	8.591998	at 5% significance level	
Theta hat	0.624844		
Theta star	0.885708	95% UCLs (Assuming Gamma Distribution)	
nu hat	243.5809	Approximate Gamma UCL	9.175606
nu star	171.84	Adjusted Gamma UCL	9.484363
Approx.Chi Square Value (.05)	142.5194		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	137.8798	Shapiro-Wilk Test Statistic	0.855139
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics			
Minimum of log data	1.335001	Data are lognormal at 5% significance level	
Maximum of log data	2.282382		
Mean of log data	1.987848	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.319952	95% H-UCL	9.507939
Variance of log data	0.102369	95% Chebyshev (MVUE) UCL	11.03972
		97.5% Chebyshev (MVUE) UCL	12.50971
		99% Chebyshev (MVUE) UCL	15.39721
95% Non-parametric UCLs			
		CLT UCL	8.701747
		Adj-CLT UCL (Adjusted for skewness)	8.530267
		Mod-t UCL (Adjusted for skewness)	8.799954
		Jackknife UCL	8.826702
		Standard Bootstrap UCL	8.586649
		Bootstrap-t UCL	8.656802
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	8.47847
		Percentile Bootstrap UCL	8.62
		BCA Bootstrap UCL	8.5
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	10.50315
		97.5% Chebyshev (Mean, Sd) UCL	11.75503
		99% Chebyshev (Mean, Sd) UCL	14.21408

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Barium
Raw Statistics				
Number of Valid Samples	9	Shapiro-Wilk Test Statistic	0.946026	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.829	
Minimum	37.1	Data are normal at 5% significance level		
Maximum	54.2			
Mean	46.91111	95% UCL (Assuming Normal Distribution)		
Median	47.3	Student's-t UCL	50.42619	
Standard Deviation	5.670856			
Variance	32.15861	Gamma Distribution Test		
Coefficient of Variation	0.120885	A-D Test Statistic	0.311114	
Skewness	-0.462667	A-D 5% Critical Value	0.720262	
		K-S Test Statistic	0.210391	
Gamma Statistics		K-S 5% Critical Value	0.278759	
k hat	73.86092	Data follow gamma distribution		
k star (bias corrected)	49.31469	at 5% significance level		
Theta hat	0.635128			
Theta star	0.95126	95% UCLs (Assuming Gamma Distribution)		
nu hat	1329.497	Approximate Gamma UCL	50.81307	
nu star	887.6644	Adjusted Gamma UCL	51.6877	
Approx.Chi Square Value (.05)	819.5003			
Adjusted Level of Significance	0.02308	Lognormal Distribution Test		
Adjusted Chi Square Value	805.6332	Shapiro-Wilk Test Statistic	0.933503	
		Shapiro-Wilk 5% Critical Value	0.829	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.613617			
Maximum of log data	3.992681	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.84147	95% H-UCL	50.95986	
Standard Deviation of log data	0.124991	95% Chebyshev (MVUE) UCL	55.44784	
Variance of log data	0.015623	97.5% Chebyshev (MVUE) UCL	59.13856	
		99% Chebyshev (MVUE) UCL	66.38827	
95% Non-parametric UCLs				
		CLT UCL	50.02035	
		Adj-CLT UCL (Adjusted for skewness)	49.70886	
		Mod-t UCL (Adjusted for skewness)	50.3776	
		Jackknife UCL	50.42619	
		Standard Bootstrap UCL	49.88343	
		Bootstrap-t UCL	50.20653	
RECOMMENDATION		Hall's Bootstrap UCL	49.69398	
Data are normal (0.05)		Percentile Bootstrap UCL	49.77778	
		BCA Bootstrap UCL	49.5	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	55.15067	
		97.5% Chebyshev (Mean, Sd) UCL	58.71594	
		99% Chebyshev (Mean, Sd) UCL	65.71921	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Beryllium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.91103	
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.88	Data are normal at 5% significance level		
Maximum	3.9			
Mean	2.238	95% UCL (Assuming Normal Distribution)		
Median	2.2	Student's-t UCL	2.859277	
Standard Deviation	1.071757			
Variance	1.148662	Gamma Distribution Test		
Coefficient of Variation	0.47889	A-D Test Statistic	0.399426	
Skewness	0.375679	A-D 5% Critical Value	0.729428	
		K-S Test Statistic	0.218931	
		K-S 5% Critical Value	0.267571	
Gamma Statistics				
k hat	4.63786	Data follow gamma distribution		
k star (bias corrected)	3.313169	at 5% significance level		
Theta hat	0.48255			
Theta star	0.675486	95% UCLs (Assuming Gamma Distribution)		
nu hat	92.75721	Approximate Gamma UCL	3.055937	
nu star	66.26338	Adjusted Gamma UCL	3.230901	
Approx. Chi Square Value (.05)	48.52765			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	45.89972	Shapiro-Wilk Test Statistic	0.925436	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.127833			
Maximum of log data	1.360977	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.693918	95% H-UCL	3.331828	
Standard Deviation of log data	0.509844	95% Chebyshev (MVUE) UCL	3.855693	
Variance of log data	0.259941	97.5% Chebyshev (MVUE) UCL	4.551698	
		99% Chebyshev (MVUE) UCL	5.918865	
		95% Non-parametric UCLs		
		CLT UCL	2.795472	
		Adj-CLT UCL (Adjusted for skewness)	2.838495	
		Mod-t UCL (Adjusted for skewness)	2.865988	
		Jackknife UCL	2.859277	
		Standard Bootstrap UCL	2.774263	
		Bootstrap-t UCL	2.972491	
RECOMMENDATION		Hall's Bootstrap UCL	2.776211	
Data are normal (0.05)		Percentile Bootstrap UCL	2.768	
		BCA Bootstrap UCL	2.81	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3.715315	
		97.5% Chebyshev (Mean, Sd) UCL	4.35455	
		99% Chebyshev (Mean, Sd) UCL	5.610203	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Cadmium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.953972	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.16	Data are normal at 5% significance level		
Maximum	1			
Mean	0.529	95% UCL (Assuming Normal Distribution)		
Median	0.515	Student's-t UCL	0.66638	
Standard Deviation	0.236993			
Variance	0.056166	Gamma Distribution Test		
Coefficient of Variation	0.448001	A-D Test Statistic	0.361284	
Skewness	0.467701	A-D 5% Critical Value	0.72944	
		K-S Test Statistic	0.187669	
Gamma Statistics		K-S 5% Critical Value	0.267496	
k hat	4.830334	Data follow gamma distribution		
k star (bias corrected)	3.447901	at 5% significance level		
Theta hat	0.109516			
Theta star	0.153427	95% UCLs (Assuming Gamma Distribution)		
nu hat	96.60668	Approximate Gamma UCL	0.717525	
nu star	68.95801	Adjusted Gamma UCL	0.757677	
Approx.Chi Square Value (.05)	50.83976			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	48.14558	Shapiro-Wilk Test Statistic	0.91861	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-1.832581			
Maximum of log data	0	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.743836	95% H-UCL	0.80489	
Standard Deviation of log data	0.521246	95% Chebyshev (MVUE) UCL	0.929192	
Variance of log data	0.271697	97.5% Chebyshev (MVUE) UCL	1.099159	
		99% Chebyshev (MVUE) UCL	1.433026	
95% Non-parametric UCLs				
		CLT UCL	0.652271	
		Adj-CLT UCL (Adjusted for skewness)	0.664115	
		Mod-t UCL (Adjusted for skewness)	0.668228	
		Jackknife UCL	0.66638	
		Standard Bootstrap UCL	0.646473	
		Bootstrap-t UCL	0.679699	
RECOMMENDATION		Hall's Bootstrap UCL	0.702836	
Data are normal (0.05)		Percentile Bootstrap UCL	0.645	
		BCA Bootstrap UCL	0.651	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.855672	
		97.5% Chebyshev (Mean, Sd) UCL	0.997023	
		99% Chebyshev (Mean, Sd) UCL	1.27468	

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Calcium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.901617
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1060	Data are normal at 5% significance level	
Maximum	3310		
Mean	1839	95% UCL (Assuming Normal Distribution)	
Median	1820	Student's-t UCL	2255.47
Standard Deviation	718.4466		
Variance	516165.6	Gamma Distribution Test	
Coefficient of Variation	0.390672	A-D Test Statistic	0.41395
Skewness	0.752593	A-D 5% Critical Value	0.727225
		K-S Test Statistic	0.187914
		K-S 5% Critical Value	0.267025
Gamma Statistics			
k hat	7.533785	Data follow gamma distribution	
k star (bias corrected)	5.340316	at 5% significance level	
Theta hat	244.1004		
Theta star	344.3616	95% UCLs (Assuming Gamma Distribution)	
nu hat	150.6757	Approximate Gamma UCL	2339.659
nu star	106.8063	Adjusted Gamma UCL	2441.927
Approx. Chi Square Value (.05)	83.95104		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	80.43517	Shapiro-Wilk Test Statistic	0.912994
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	6.966024		
Maximum of log data	8.104703	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	7.449144	95% H-UCL	2426.556
Standard Deviation of log data	0.389202	95% Chebyshev (MVUE) UCL	2836.621
Variance of log data	0.151478	97.5% Chebyshev (MVUE) UCL	3268.36
		99% Chebyshev (MVUE) UCL	4116.427
		95% Non-parametric UCLs	
		CLT UCL	2212.699
		Adj-CLT UCL (Adjusted for skewness)	2270.473
		Mod-t UCL (Adjusted for skewness)	2264.482
		Jackknife UCL	2255.47
		Standard Bootstrap UCL	2190.518
		Bootstrap-t UCL	2336.83
RECOMMENDATION		Hall's Bootstrap UCL	2325.48
Data are normal (0.05)		Percentile Bootstrap UCL	2187
		BCA Bootstrap UCL	2239
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2829.31
		97.5% Chebyshev (Mean, Sd) UCL	3257.818
		99% Chebyshev (Mean, Sd) UCL	4099.54

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Chromium
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.960434
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	13.9	Data are normal at 5% significance level	
Maximum	29.7		
Mean	22.96	95% UCL (Assuming Normal Distribution)	
Median	22.7	Student's-t UCL	25.4983
Standard Deviation	4.378787		
Variance	19.17378	Gamma Distribution Test	
Coefficient of Variation	0.190714	A-D Test Statistic	0.340815
Skewness	-0.600998	A-D 5% Critical Value	0.724511
		K-S Test Statistic	0.161158
		K-S 5% Critical Value	0.266095
Gamma Statistics			
k hat	27.25781	Data follow gamma distribution	
k star (bias corrected)	19.14713	at 5% significance level	
Theta hat	0.842327		
Theta star	1.199135	95% UCLs (Assuming Gamma Distribution)	
nu hat	545.1562	Approximate Gamma UCL	25.96851
nu star	382.9427	Adjusted Gamma UCL	26.53744
Approx. Chi Square Value (.05)	338.5779		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	331.3192	Shapiro-Wilk Test Statistic	0.905806
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics			
Minimum of log data	2.631889	Data are lognormal at 5% significance level	
Maximum of log data	3.391147		
Mean of log data	3.115298	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.209669	95% H-UCL	26.29392
Variance of log data	0.043961	95% Chebyshev (MVUE) UCL	29.65722
		97.5% Chebyshev (MVUE) UCL	32.54227
		99% Chebyshev (MVUE) UCL	38.2094
		95% Non-parametric UCLs	
		CLT UCL	25.23762
		Adj-CLT UCL (Adjusted for skewness)	24.95642
		Mod-t UCL (Adjusted for skewness)	25.45444
		Jackknife UCL	25.4983
		Standard Bootstrap UCL	25.12875
		Bootstrap-t UCL	25.27288
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	25.1198
		Percentile Bootstrap UCL	25.03
		BCA Bootstrap UCL	24.88
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	28.99574
		97.5% Chebyshev (Mean, Sd) UCL	31.60741
		99% Chebyshev (Mean, Sd) UCL	36.73753

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Cobalt
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.946396
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1.8	Data are normal at 5% significance level	
Maximum	4.9		
Mean	3.13	95% UCL (Assuming Normal Distribution)	
Median	2.95	Student's-t UCL	3.662725
Standard Deviation	0.918997		
Variance	0.844556	Gamma Distribution Test	
Coefficient of Variation	0.293609	A-D Test Statistic	0.258163
Skewness	0.690851	A-D 5% Critical Value	0.724891
Gamma Statistics		K-S Test Statistic	0.177479
k hat	13.31798	K-S 5% Critical Value	0.266477
k star (bias corrected)	9.389255	Data follow gamma distribution	
Theta hat	0.235021	at 5% significance level	
Theta star	0.33336	95% UCLs (Assuming Gamma Distribution)	
nu hat	266.3597	Approximate Gamma UCL	3.741855
nu star	187.7851	Adjusted Gamma UCL	3.861848
Approx.Chi Square Value (.05)	157.0791		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	152.1985	Shapiro-Wilk Test Statistic	0.973574
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	0.587787	Data are lognormal at 5% significance level	
Maximum of log data	1.589235	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.10302	95% H-UCL	3.803674
Standard Deviation of log data	0.290755	95% Chebyshev (MVUE) UCL	4.392284
Variance of log data	0.084538	97.5% Chebyshev (MVUE) UCL	4.938612
		99% Chebyshev (MVUE) UCL	6.011768
95% Non-parametric UCLs			
		CLT UCL	3.608015
		Adj-CLT UCL (Adjusted for skewness)	3.675854
		Mod-t UCL (Adjusted for skewness)	3.673307
		Jackknife UCL	3.662725
		Standard Bootstrap UCL	3.586384
		Bootstrap-t UCL	3.78895
RECOMMENDATION		Hall's Bootstrap UCL	3.799552
Data are normal (0.05)		Percentile Bootstrap UCL	3.6
		BCA Bootstrap UCL	3.64
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	4.39675
		97.5% Chebyshev (Mean, Sd) UCL	4.944874
		99% Chebyshev (Mean, Sd) UCL	6.021557

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Copper
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.825198	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	5.7	Data not normal at 5% significance level		
Maximum	23.5			
Mean	12.525	95% UCL (Assuming Normal Distribution)		
Median	11.5	Student's-t UCL	16.51979	
Standard Deviation	6.891349			
Variance	47.49069	Gamma Distribution Test		
Coefficient of Variation	0.550208	A-D Test Statistic	0.990575	
Skewness	0.309352	A-D 5% Critical Value	0.73076	
Gamma Statistics				
k hat	3.50882	Data do not follow gamma distribution		
k star (bias corrected)	2.522841	at 5% significance level		
Theta hat	3.569576			
Theta star	4.964641	95% UCLs (Assuming Gamma Distribution)		
nu hat	70.17641	Approximate Gamma UCL	17.98286	
nu star	50.45682	Adjusted Gamma UCL	19.18904	
Approx. Chi Square Value (.05)	35.143			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	32.93399	Shapiro-Wilk Test Statistic	0.805286	
Log-transformed Statistics				
Minimum of log data	1.740466	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	3.157	Data not lognormal at 5% significance level		
Mean of log data	2.378513			
Standard Deviation of log data	0.585153	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.342404	95% H-UCL	20.22866	
		95% Chebyshev (MVUE) UCL	22.92703	
		97.5% Chebyshev (MVUE) UCL	27.41293	
		99% Chebyshev (MVUE) UCL	36.22462	
95% Non-parametric UCLs				
		CLT UCL	16.10952	
		Adj-CLT UCL (Adjusted for skewness)	16.33732	
		Mod-t UCL (Adjusted for skewness)	16.55532	
		Jackknife UCL	16.51979	
		Standard Bootstrap UCL	15.99025	
		Bootstrap-t UCL	16.78637	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	15.44617	
		Percentile Bootstrap UCL	15.86	
		BCA Bootstrap UCL	16.18	
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	22.02407	
		97.5% Chebyshev (Mean, Sd) UCL	26.13432	
		99% Chebyshev (Mean, Sd) UCL	34.20812	

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Iron	1
Raw Statistics					
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.942623		
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	3560	Data are normal at 5% significance level			
Maximum	9520				
Mean	6409	95% UCL (Assuming Normal Distribution)			
Median	5725	Student's-t UCL	7461.477		
Standard Deviation	1815.614				
Variance	3296454	Gamma Distribution Test			
Coefficient of Variation	0.283291	A-D Test Statistic	0.331537		
Skewness	0.426755	A-D 5% Critical Value	0.724869		
Gamma Statistics					
k hat	13.74457	K-S Test Statistic	0.221901		
k star (bias corrected)	9.687866	K-S 5% Critical Value	0.266458		
Theta hat	466.2932	Data follow gamma distribution			
Theta star	661.5492	at 5% significance level			
nu hat	274.8914	95% UCLs (Assuming Gamma Distribution)			
nu star	193.7573	Approximate Gamma UCL	7639.546		
Approx.Chi Square Value (.05)	162.5477	Adjusted Gamma UCL	7880.411		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	157.5794	Shapiro-Wilk Test Statistic	0.950826		
Log-transformed Statistics					
Minimum of log data	8.177516	Shapiro-Wilk 5% Critical Value	0.842		
Maximum of log data	9.16115	Data are lognormal at 5% significance level			
Mean of log data	8.72864	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.289112	95% H-UCL	7784.347		
Variance of log data	0.083586	95% Chebyshev (MVUE) UCL	8985.764		
		97.5% Chebyshev (MVUE) UCL	10098.88		
		99% Chebyshev (MVUE) UCL	12285.38		
95% Non-parametric UCLs					
		CLT UCL	7353.389		
		Adj-CLT UCL (Adjusted for skewness)	7436.18		
		Mod-t UCL (Adjusted for skewness)	7474.391		
		Jackknife UCL	7461.477		
		Standard Bootstrap UCL	7299.105		
		Bootstrap-t UCL	7689.342		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	7560.519		
		Percentile Bootstrap UCL	7357		
		BCA Bootstrap UCL	7367		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	8911.651		
		97.5% Chebyshev (Mean, Sd) UCL	9994.55		
		99% Chebyshev (Mean, Sd) UCL	12121.7		

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Lead
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.624733
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	52.7	Data not normal at 5% significance level	
Maximum	300		
Mean	99.83	95% UCL (Assuming Normal Distribution)	
Median	70.35	Student's-t UCL	143.3982
Standard Deviation	75.15891		
Variance	5648.862	Gamma Distribution Test	
Coefficient of Variation	0.752869	A-D Test Statistic	1.219031
Skewness	2.546666	A-D 5% Critical Value	0.731285
		K-S Test Statistic	0.341609
Gamma Statistics		K-S 5% Critical Value	0.268248
k hat	3.320848	Data do not follow gamma distribution	
k star (bias corrected)	2.391261	at 5% significance level	
Theta hat	30.06159		
Theta star	41.74786	95% UCLs (Assuming Gamma Distribution)	
nu hat	66.41697	Approximate Gamma UCL	144.8975
nu star	47.82521	Adjusted Gamma UCL	154.9278
Approx. Chi Square Value (.05)	32.95012		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	30.81688	Shapiro-Wilk Test Statistic	0.783641
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	3.964615		
Maximum of log data	5.703782	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.445414	95% H-UCL	145.5312
Standard Deviation of log data	0.526613	95% Chebyshev (MVUE) UCL	167.7997
Variance of log data	0.277321	97.5% Chebyshev (MVUE) UCL	198.6811
		99% Chebyshev (MVUE) UCL	259.3414
		95% Non-parametric UCLs	
		CLT UCL	138.9238
		Adj-CLT UCL (Adjusted for skewness)	159.3756
		Mod-t UCL (Adjusted for skewness)	146.5883
		Jackknife UCL	143.3982
		Standard Bootstrap UCL	137.1174
		Bootstrap-t UCL	289.1831
RECOMMENDATION		Hall's Bootstrap UCL	299.6765
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	141.76
		BCA Bootstrap UCL	168.4
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	203.4294
		97.5% Chebyshev (Mean, Sd) UCL	248.257
		99% Chebyshev (Mean, Sd) UCL	336.312

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Magnesium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.979605	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1020	Data are normal at 5% significance level		
Maximum	2710			
Mean	1867	95% UCL (Assuming Normal Distribution)		
Median	1865	Student's-t UCL	2182.784	
Standard Deviation	544.7538			
Variance	296756.7	Gamma Distribution Test		
Coefficient of Variation	0.29178	A-D Test Statistic	0.169941	
Skewness	0.007824	A-D 5% Critical Value	0.724947	
Gamma Statistics		K-S Test Statistic	0.132872	
k hat	12.20868	K-S 5% Critical Value	0.266528	
k star (bias corrected)	8.612743	Data follow gamma distribution		
Theta hat	152.924	at 5% significance level		
Theta star	216.7718	95% UCLs (Assuming Gamma Distribution)		
nu hat	244.1736	Approximate Gamma UCL	2250.563	
nu star	172.2549	Adjusted Gamma UCL	2326.195	
Approx.Chi Square Value (.05)	142.8975	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.96629	
Adjusted Chi Square Value	138.2514	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	6.927558			
Maximum of log data	7.904704	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.490575	95% H-UCL	2310.242	
Standard Deviation of log data	0.311025	95% Chebyshev (MVUE) UCL	2678.376	
Variance of log data	0.096736	97.5% Chebyshev (MVUE) UCL	3027.966	
		99% Chebyshev (MVUE) UCL	3714.666	
95% Non-parametric UCLs				
		CLT UCL	2150.353	
		Adj-CLT UCL (Adjusted for skewness)	2150.808	
		Mod-t UCL (Adjusted for skewness)	2182.855	
		Jackknife UCL	2182.784	
		Standard Bootstrap UCL	2139.402	
		Bootstrap-t UCL	2174.114	
RECOMMENDATION		Hall's Bootstrap UCL	2147.396	
Data are normal (0.05)		Percentile Bootstrap UCL	2125	
		BCA Bootstrap UCL	2135	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2617.891	
		97.5% Chebyshev (Mean, Sd) UCL	2942.802	
		99% Chebyshev (Mean, Sd) UCL	3581.028	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Manganese
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.970675	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	37.3	Data are normal at 5% significance level		
Maximum	84			
Mean	61.64	95% UCL (Assuming Normal Distribution)		
Median	58.75	Student's-t UCL	69.94756	
Standard Deviation	14.33126			
Variance	205.3849	Gamma Distribution Test		
Coefficient of Variation	0.232499	A-D Test Statistic	0.215846	
Skewness	0.041015	A-D 5% Critical Value	0.724568	
Gamma Statistics				
k hat	19.63841	K-S Test Statistic	0.127071	
k star (bias corrected)	13.81356	K-S 5% Critical Value	0.266187	
Theta hat	3.138747	Data follow gamma distribution		
Theta star	4.462283	at 5% significance level		
nu hat	392.7683	Lognormal Distribution Test		
nu star	276.2711	Approximate Gamma UCL	71.3214	
Approx.Chi Square Value (.05)	238.7692	Adjusted Gamma UCL	73.1798	
Adjusted Level of Significance	0.0267			
Adjusted Chi Square Value	232.7056	95% Non-parametric UCLs		
Log-transformed Statistics				
Minimum of log data	3.618993	Shapiro-Wilk Test Statistic	0.960599	
Maximum of log data	4.430817	Shapiro-Wilk 5% Critical Value	0.842	
Mean of log data	4.095635	Data are lognormal at 5% significance level		
Standard Deviation of log data	0.243074	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.059085	95% H-UCL	72.29583	
		95% Chebyshev (MVUE) UCL	82.45941	
		97.5% Chebyshev (MVUE) UCL	91.44535	
		99% Chebyshev (MVUE) UCL	109.0965	
RECOMMENDATION				
Data are normal (0.05)		CLT UCL	69.09438	
		Adj-CLT UCL (Adjusted for skewness)	69.15719	
		Mod-t UCL (Adjusted for skewness)	69.95736	
		Jackknife UCL	69.94756	
		Standard Bootstrap UCL	68.48248	
		Bootstrap-t UCL	70.16315	
		Hall's Bootstrap UCL	69.51101	
		Percentile Bootstrap UCL	68.92	
		BCA Bootstrap UCL	68.97	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	81.39427	
		97.5% Chebyshev (Mean, Sd) UCL	89.94196	
		99% Chebyshev (Mean, Sd) UCL	106.7322	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Molybder
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.871824	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1.01	Data are normal at 5% significance level		
Maximum	2.6			
Mean	1.669	95% UCL (Assuming Normal Distribution)		
Median	1.54	Student's-t UCL	2.028459	
Standard Deviation	0.620098			
Variance	0.384521	Gamma Distribution Test		
Coefficient of Variation	0.371538	A-D Test Statistic	0.531659	
Skewness	0.461066	A-D 5% Critical Value	0.726606	
Gamma Statistics		K-S Test Statistic	0.229268	
k hat	8.239102	K-S 5% Critical Value	0.266912	
k star (bias corrected)	5.834038	Data follow gamma distribution		
Theta hat	0.202571	at 5% significance level		
Theta star	0.28608	95% UCLs (Assuming Gamma Distribution)		
nu hat	164.782	Approximate Gamma UCL	2.099935	
nu star	116.6808	Adjusted Gamma UCL	2.187324	
Approx.Chi Square Value (.05)	92.73629			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	89.03125	Shapiro-Wilk Test Statistic	0.887927	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	0.00995	Data are lognormal at 5% significance level		
Maximum of log data	0.955511	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.450313	95% H-UCL	2.164967	
Standard Deviation of log data	0.370293	95% Chebyshev (MVUE) UCL	2.528368	
Variance of log data	0.137117	97.5% Chebyshev (MVUE) UCL	2.900615	
		99% Chebyshev (MVUE) UCL	3.631822	
95% Non-parametric UCLs				
		CLT UCL	1.991543	
		Adj-CLT UCL (Adjusted for skewness)	2.022092	
		Mod-t UCL (Adjusted for skewness)	2.033224	
		Jackknife UCL	2.028459	
		Standard Bootstrap UCL	1.97371	
		Bootstrap-t UCL	2.086605	
RECOMMENDATION		Hall's Bootstrap UCL	1.93394	
Data are normal (0.05)		Percentile Bootstrap UCL	1.98	
		BCA Bootstrap UCL	1.991	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.523746	
		97.5% Chebyshev (Mean, Sd) UCL	2.893595	
		99% Chebyshev (Mean, Sd) UCL	3.620092	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Nickel
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.92851	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	9.2	Data are normal at 5% significance level		
Maximum	17			
Mean	14.01	95% UCL (Assuming Normal Distribution)		
Median	13.9	Student's-t UCL	15.32208	
Standard Deviation	2.263454			
Variance	5.123222	Gamma Distribution Test		
Coefficient of Variation	0.16156	A-D Test Statistic	0.416453	
Skewness	-0.766803	A-D 5% Critical Value	0.724452	
		K-S Test Statistic	0.209573	
		K-S 5% Critical Value	0.26598	
Gamma Statistics				
k hat	38.3813	Data follow gamma distribution		
k star (bias corrected)	26.93358	at 5% significance level		
Theta hat	0.365021			
Theta star	0.520169	95% UCLs (Assuming Gamma Distribution)		
nu hat	767.6261	Approximate Gamma UCL	15.53373	
nu star	538.6716	Adjusted Gamma UCL	15.81813	
Approx.Chi Square Value (.05)	485.8324			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	477.0973	Shapiro-Wilk Test Statistic	0.882048	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	2.219203	Data are lognormal at 5% significance level		
Maximum of log data	2.833213			
Mean of log data	2.626688	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.175725	95% H-UCL	15.65973	
Variance of log data	0.030879	95% Chebyshev (MVUE) UCL	17.42578	
		97.5% Chebyshev (MVUE) UCL	18.89897	
		99% Chebyshev (MVUE) UCL	21.79278	
		95% Non-parametric UCLs		
		CLT UCL	15.18733	
		Adj-CLT UCL (Adjusted for skewness)	15.00188	
		Mod-t UCL (Adjusted for skewness)	15.29315	
		Jackknife UCL	15.32208	
		Standard Bootstrap UCL	15.11249	
		Bootstrap-t UCL	15.07135	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	15.09873	
		Percentile Bootstrap UCL	15.08	
		BCA Bootstrap UCL	14.91	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	17.12996	
		97.5% Chebyshev (Mean, Sd) UCL	18.47996	
		99% Chebyshev (Mean, Sd) UCL	21.13179	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Potassium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.964047
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	430	Data are normal at 5% significance level	
Maximum	751		
Mean	595.4	95% UCL (Assuming Normal Distribution)	
Median	592.5	Student's-t UCL	645.9038
Standard Deviation	87.12341		
Variance	7590.489	Gamma Distribution Test	
Coefficient of Variation	0.146328	A-D Test Statistic	0.335512
Skewness	-0.172988	A-D 5% Critical Value	0.724391
		K-S Test Statistic	0.202913
Gamma Statistics		K-S 5% Critical Value	0.265862
k hat	49.79666	Data follow gamma distribution	
k star (bias corrected)	34.92433	at 5% significance level	
Theta hat	11.95663		
Theta star	17.04829	95% UCLs (Assuming Gamma Distribution)	
nu hat	995.9331	Approximate Gamma UCL	651.6909
nu star	698.4865	Adjusted Gamma UCL	662.1088
Approx.Chi Square Value (.05)	638.1536		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	628.1126	Shapiro-Wilk Test Statistic	0.944853
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	6.063785		
Maximum of log data	6.621406	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.379159	95% H-UCL	654.4159
Standard Deviation of log data	0.151698	95% Chebyshev (MVUE) UCL	720.3261
Variance of log data	0.023012	97.5% Chebyshev (MVUE) UCL	774.3118
		99% Chebyshev (MVUE) UCL	880.3562
		95% Non-parametric UCLs	
		CLT UCL	640.7171
		Adj-CLT UCL (Adjusted for skewness)	639.1067
		Mod-t UCL (Adjusted for skewness)	645.6526
		Jackknife UCL	645.9038
		Standard Bootstrap UCL	639.0547
		Bootstrap-t UCL	641.5597
RECOMMENDATION		Hall's Bootstrap UCL	650.1318
Data are normal (0.05)		Percentile Bootstrap UCL	636.7
		BCA Bootstrap UCL	636.6
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	715.4913
		97.5% Chebyshev (Mean, Sd) UCL	767.455
		99% Chebyshev (Mean, Sd) UCL	869.5274

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Selenium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.933165	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.55	Data are normal at 5% significance level		
Maximum	4.2			
Mean	2.425	95% UCL (Assuming Normal Distribution)		
Median	2.6	Student's-t UCL	3.110514	
Standard Deviation	1.18257			
Variance	1.398472	Gamma Distribution Test		
Coefficient of Variation	0.487658	A-D Test Statistic	0.6386	
Skewness	-0.391588	A-D 5% Critical Value	0.731392	
Gamma Statistics				
k hat	3.282375	K-S Test Statistic	0.294891	
k star (bias corrected)	2.364329	K-S 5% Critical Value	0.268272	
Theta hat	0.738794	Data follow approximate gamma distribution		
Theta star	1.025661	at 5% significance level		
nu hat	65.6475	95% UCLs (Assuming Gamma Distribution)		
nu star	47.28659	Approximate Gamma UCL	3.528004	
Approx.Chi Square Value (.05)	32.50279	Adjusted Gamma UCL	3.773863	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	30.38531	Shapiro-Wilk Test Statistic	0.851938	
Log-transformed Statistics				
Minimum of log data	-0.597837	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	1.435085	Data are lognormal at 5% significance level		
Mean of log data	0.725837			
Standard Deviation of log data	0.665763	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.443241	95% H-UCL	4.466038	
		95% Chebyshev (MVUE) UCL	4.887022	
		97.5% Chebyshev (MVUE) UCL	5.913891	
		99% Chebyshev (MVUE) UCL	7.930976	
95% Non-parametric UCLs				
		CLT UCL	3.040112	
		Adj-CLT UCL (Adjusted for skewness)	2.990631	
		Mod-t UCL (Adjusted for skewness)	3.102796	
		Jackknife UCL	3.110514	
		Standard Bootstrap UCL	2.998209	
		Bootstrap-t UCL	3.088264	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	2.967871	
Use Student's-t UCL		Percentile Bootstrap UCL	2.99	
		BCA Bootstrap UCL	2.98	
		95% Chebyshev (Mean, Sd) UCL	4.05506	
		97.5% Chebyshev (Mean, Sd) UCL	4.760389	
		99% Chebyshev (Mean, Sd) UCL	6.14587	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Silver
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.88392
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.082	Data are normal at 5% significance level	
Maximum	0.16		
Mean	0.11118	95% UCL (Assuming Normal Distribution)	
Median	0.1075	Student's-t UCL	0.126694
Standard Deviation	0.025694		
Variance	0.00066	Gamma Distribution Test	
Coefficient of Variation	0.22982	A-D Test Statistic	0.614898
Skewness	0.568548	A-D 5% Critical Value	0.72454
Gamma Statistics			
k hat	21.8089	K-S Test Statistic	0.247921
k star (bias corrected)	15.33289	K-S 5% Critical Value	0.266151
Theta hat	0.005126	Data follow gamma distribution	
Theta star	0.007292	at 5% significance level	
nu hat	436.1779	95% UCLs (Assuming Gamma Distribution)	
nu star	306.6579	Approximate Gamma UCL	0.128366
Approx.Chi Square Value (.05)	267.083	Adjusted Gamma UCL	0.13153
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	260.6585	Shapiro-Wilk Test Statistic	0.894419
Log-transformed Statistics			
Minimum of log data	-2.501036	Shapiro-Wilk 5% Critical Value	0.842
Maximum of log data	-1.832581	Data are lognormal at 5% significance level	
Mean of log data	-2.214145	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.225113	95% H-UCL	0.129254
Variance of log data	0.050676	95% Chebyshev (MVUE) UCL	0.146581
		97.5% Chebyshev (MVUE) UCL	0.161647
		99% Chebyshev (MVUE) UCL	0.191242
95% Non-parametric UCLs			
		CLT UCL	0.125165
		Adj-CLT UCL (Adjusted for skewness)	0.126726
		Mod-t UCL (Adjusted for skewness)	0.126938
		Jackknife UCL	0.126694
		Standard Bootstrap UCL	0.124349
		Bootstrap-t UCL	0.127863
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	0.125434
Use Student's-t UCL		Percentile Bootstrap UCL	0.1246
		BCA Bootstrap UCL	0.1256
		95% Chebyshev (Mean, Sd) UCL	0.147217
		97.5% Chebyshev (Mean, Sd) UCL	0.162541
		99% Chebyshev (Mean, Sd) UCL	0.192644

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Sodium
Raw Statistics			
Number of Valid Samples	9	Shapiro-Wilk Test Statistic	0.940051
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.829
Minimum	629	Data are normal at 5% significance level	
Maximum	1170		
Mean	906.2222	95% UCL (Assuming Normal Distribution)	
Median	914	Student's-t UCL	1006.74
Standard Deviation	162.1641		
Variance	26297.19	Gamma Distribution Test	
Coefficient of Variation	0.178945	A-D Test Statistic	0.453965
Skewness	-0.246664	A-D 5% Critical Value	0.720772
Gamma Statistics		K-S Test Statistic	0.264637
k hat	33.20364	K-S 5% Critical Value	0.278797
k star (bias corrected)	22.20984	Data follow gamma distribution	
Theta hat	27.29286	at 5% significance level	
Theta star	40.80274	95% UCLs (Assuming Gamma Distribution)	
nu hat	597.6655	Approximate Gamma UCL	1022.192
nu star	399.777	Adjusted Gamma UCL	1048.916
Approx.Chi Square Value (.05)	354.4216	Lognormal Distribution Test	
Adjusted Level of Significance	0.02308	Shapiro-Wilk Test Statistic	0.917513
Adjusted Chi Square Value	345.3916	Shapiro-Wilk 5% Critical Value	0.829
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	6.444131		
Maximum of log data	7.064759	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.79415	95% H-UCL	1031.116
Standard Deviation of log data	0.187851	95% Chebyshev (MVUE) UCL	1154.743
Variance of log data	0.035288	97.5% Chebyshev (MVUE) UCL	1262.072
		99% Chebyshev (MVUE) UCL	1472.9
95% Non-parametric UCLs			
		CLT UCL	995.1343
		Adj-CLT UCL (Adjusted for skewness)	990.3853
		Mod-t UCL (Adjusted for skewness)	1005.999
		Jackknife UCL	1006.74
		Standard Bootstrap UCL	990.95
		Bootstrap-t UCL	1003.426
RECOMMENDATION		Hall's Bootstrap UCL	1002.126
Data are normal (0.05)		Percentile Bootstrap UCL	989.6667
		BCA Bootstrap UCL	986.1111
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1141.841
		97.5% Chebyshev (Mean, Sd) UCL	1243.794
		99% Chebyshev (Mean, Sd) UCL	1444.06

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Thallium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.927461	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.085	Data are normal at 5% significance level		
Maximum	0.32			
Mean	0.1935	95% UCL (Assuming Normal Distribution)		
Median	0.185	Student's-t UCL	0.241439	
Standard Deviation	0.082699			
Variance	0.006839	Gamma Distribution Test		
Coefficient of Variation	0.427386	A-D Test Statistic	0.362137	
Skewness	0.22227	A-D 5% Critical Value	0.728793	
Gamma Statistics				
k hat	5.748555	K-S Test Statistic	0.197446	
k star (bias corrected)	4.090655	K-S 5% Critical Value	0.26731	
Theta hat	0.033661	Data follow gamma distribution		
Theta star	0.047303	at 5% significance level		
nu hat	114.9711	95% UCLs (Assuming Gamma Distribution)		
nu star	81.81311	Approximate Gamma UCL	0.255477	
Approx.Chi Square Value (.05)	61.9657	Adjusted Gamma UCL	0.268447	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	58.97183	Shapiro-Wilk Test Statistic	0.932638	
Log-transformed Statistics				
Minimum of log data	-2.465104	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	-1.139434	Data are lognormal at 5% significance level		
Mean of log data	-1.73197	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.456327	95% H-UCL	0.272742	
Variance of log data	0.208234	95% Chebyshev (MVUE) UCL	0.318158	
		97.5% Chebyshev (MVUE) UCL	0.371809	
		99% Chebyshev (MVUE) UCL	0.477198	
95% Non-parametric UCLs				
		CLT UCL	0.236516	
		Adj-CLT UCL (Adjusted for skewness)	0.23848	
		Mod-t UCL (Adjusted for skewness)	0.241746	
		Jackknife UCL	0.241439	
		Standard Bootstrap UCL	0.234595	
		Bootstrap-t UCL	0.243622	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	0.232185	
Use Student's-t UCL		Percentile Bootstrap UCL	0.2345	
		BCA Bootstrap UCL	0.234	
		95% Chebyshev (Mean, Sd) UCL	0.307493	
		97.5% Chebyshev (Mean, Sd) UCL	0.356818	
		99% Chebyshev (Mean, Sd) UCL	0.453707	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Thorium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.835813	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.38	Data not normal at 5% significance level		
Maximum	2.34			
Mean	1.0932	95% UCL (Assuming Normal Distribution)		
Median	0.866	Student's-t UCL	1.500169	
Standard Deviation	0.702057			
Variance	0.492885	Gamma Distribution Test		
Coefficient of Variation	0.642204	A-D Test Statistic	0.367873	
Skewness	1.138045	A-D 5% Critical Value	0.732018	
Gamma Statistics		K-S Test Statistic	0.166492	
k hat	3.058129	K-S 5% Critical Value	0.268413	
k star (bias corrected)	2.207357	Data follow gamma distribution		
Theta hat	0.357473	at 5% significance level		
Theta star	0.495253	95% UCLs (Assuming Gamma Distribution)		
nu hat	61.16258	Approximate Gamma UCL	1.613768	
nu star	44.14714	Adjusted Gamma UCL	1.730902	
Approx.Chi Square Value (.05)	29.90619	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.948688	
Adjusted Chi Square Value	27.88238	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.967584			
Maximum of log data	0.850151	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.083209	95% H-UCL	1.808196	
Standard Deviation of log data	0.612782	95% Chebyshev (MVUE) UCL	2.02794	
Variance of log data	0.375501	97.5% Chebyshev (MVUE) UCL	2.435163	
		99% Chebyshev (MVUE) UCL	3.235074	
95% Non-parametric UCLs				
		CLT UCL	1.458374	
		Adj-CLT UCL (Adjusted for skewness)	1.543745	
		Mod-t UCL (Adjusted for skewness)	1.513486	
		Jackknife UCL	1.500169	
		Standard Bootstrap UCL	1.433033	
		Bootstrap-t UCL	1.801716	
RECOMMENDATION		Hall's Bootstrap UCL	2.348303	
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	1.4522	
		BCA Bootstrap UCL	1.5472	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	2.060919	
		97.5% Chebyshev (Mean, Sd) UCL	2.479652	
		99% Chebyshev (Mean, Sd) UCL	3.302172	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Titanium
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.968996
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	282	Data are normal at 5% significance level	
Maximum	727		
Mean	492.5	95% UCL (Assuming Normal Distribution)	
Median	514.5	Student's-t UCL	567.8384
Standard Deviation	129.9652		
Variance	16890.94	Gamma Distribution Test	
Coefficient of Variation	0.263889	A-D Test Statistic	0.281639
Skewness	0.051925	A-D 5% Critical Value	0.724804
Gamma Statistics		K-S Test Statistic	0.159413
k hat	15.02511	K-S 5% Critical Value	0.266399
k star (bias corrected)	10.58424	Data follow gamma distribution	
Theta hat	32.77847	at 5% significance level	
Theta star	46.53144	95% UCLs (Assuming Gamma Distribution)	
nu hat	300.5021	Approximate Gamma UCL	582.4016
nu star	211.6848	Adjusted Gamma UCL	599.9071
Approx.Chi Square Value (.05)	179.0084	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.954473
Adjusted Chi Square Value	173.7849	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	5.641907		
Maximum of log data	6.588926	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.165848	95% H-UCL	594.2414
Standard Deviation of log data	0.279646	95% Chebyshev (MVUE) UCL	684.4864
Variance of log data	0.078202	97.5% Chebyshev (MVUE) UCL	767.2535
		99% Chebyshev (MVUE) UCL	929.8336
95% Non-parametric UCLs			
		CLT UCL	560.1012
		Adj-CLT UCL (Adjusted for skewness)	560.8223
		Mod-t UCL (Adjusted for skewness)	567.9508
		Jackknife UCL	567.8384
		Standard Bootstrap UCL	557.4056
		Bootstrap-t UCL	566.4585
RECOMMENDATION		Hall's Bootstrap UCL	567.3353
Data are normal (0.05)		Percentile Bootstrap UCL	559.2
		BCA Bootstrap UCL	557.1
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	671.6446
		97.5% Chebyshev (Mean, Sd) UCL	749.1606
		99% Chebyshev (Mean, Sd) UCL	901.4258

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Tungsten
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.839544
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.15	Data not normal at 5% significance level	
Maximum	0.795		
Mean	0.5145	95% UCL (Assuming Normal Distribution)	
Median	0.5325	Student's-t UCL	0.653848
Standard Deviation	0.240387		
Variance	0.057786	Gamma Distribution Test	
Coefficient of Variation	0.467224	A-D Test Statistic	0.791513
Skewness	-0.176561	A-D 5% Critical Value	0.729401
Gamma Statistics			
k hat	4.184845	Data do not follow gamma distribution	
k star (bias corrected)	2.996058	at 5% significance level	
Theta hat	0.122944		
Theta star	0.171726	95% UCLs (Assuming Gamma Distribution)	
nu hat	83.69691	Approximate Gamma UCL	0.715003
nu star	59.92117	Adjusted Gamma UCL	0.758386
Approx.Chi Square Value (.05)	43.11791	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.846694
Adjusted Chi Square Value	40.65139	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics			
Minimum of log data	-1.89712	Data are lognormal at 5% significance level	
Maximum of log data	-0.229413		
Mean of log data	-0.78877	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.560706	95% H-UCL	0.818535
Variance of log data	0.314391	95% Chebyshev (MVUE) UCL	0.935186
		97.5% Chebyshev (MVUE) UCL	1.113741
		99% Chebyshev (MVUE) UCL	1.464476
95% Non-parametric UCLs			
		CLT UCL	0.639537
		Adj-CLT UCL (Adjusted for skewness)	0.635002
		Mod-t UCL (Adjusted for skewness)	0.65314
		Jackknife UCL	0.653848
		Standard Bootstrap UCL	0.630248
		Bootstrap-t UCL	0.648745
RECOMMENDATION			
Data are lognormal (0.05)		Hall's Bootstrap UCL	0.620087
		Percentile Bootstrap UCL	0.628
		BCA Bootstrap UCL	0.619
Use H-UCL		95% Chebyshev (Mean, Sd) UCL	0.84585
		97.5% Chebyshev (Mean, Sd) UCL	0.989226
		99% Chebyshev (Mean, Sd) UCL	1.27086
Recommended UCL exceeds the maximum observation			

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Uranium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.848498	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1.9	Data are normal at 5% significance level		
Maximum	22.6			
Mean	10.5	95% UCL (Assuming Normal Distribution)		
Median	9.95	Student's-t UCL	15.03504	
Standard Deviation	7.823327			
Variance	61.20444	Gamma Distribution Test		
Coefficient of Variation	0.745079	A-D Test Statistic	0.758825	
Skewness	0.215355	A-D 5% Critical Value	0.738435	
Gamma Statistics				
k hat	1.608893	Data do not follow gamma distribution		
k star (bias corrected)	1.192891	at 5% significance level		
Theta hat	6.526228			
Theta star	8.802142	95% UCLs (Assuming Gamma Distribution)		
nu hat	32.17785	Approximate Gamma UCL	18.23345	
nu star	23.85783	Adjusted Gamma UCL	20.16514	
Approx.Chi Square Value (.05)	13.73888			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	12.42278	Shapiro-Wilk Test Statistic	0.862316	
Log-transformed Statistics				
Minimum of log data	0.641854	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	3.11795	Data are lognormal at 5% significance level		
Mean of log data	2.009483			
Standard Deviation of log data	0.935606	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.875358	95% H-UCL	29.20097	
		95% Chebyshev (MVUE) UCL	25.63431	
		97.5% Chebyshev (MVUE) UCL	32.00249	
		99% Chebyshev (MVUE) UCL	44.51156	
95% Non-parametric UCLs				
		CLT UCL	14.56929	
		Adj-CLT UCL (Adjusted for skewness)	14.74931	
		Mod-t UCL (Adjusted for skewness)	15.06312	
		Jackknife UCL	15.03504	
		Standard Bootstrap UCL	14.38735	
		Bootstrap-t UCL	15.14078	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	13.92016	
Use Student's-t UCL		Percentile Bootstrap UCL	14.41	
		BCA Bootstrap UCL	14.59	
		95% Chebyshev (Mean, Sd) UCL	21.28371	
		97.5% Chebyshev (Mean, Sd) UCL	25.94983	
		99% Chebyshev (Mean, Sd) UCL	35.11552	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Uranium-
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.86343
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.013	Data are normal at 5% significance level	
Maximum	0.16		
Mean	0.0703	95% UCL (Assuming Normal Distribution)	
Median	0.0655	Student's-t UCL	0.10114
Standard Deviation	0.053202		
Variance	0.00283	Gamma Distribution Test	
Coefficient of Variation	0.756786	A-D Test Statistic	0.687854
Skewness	0.352608	A-D 5% Critical Value	0.738436
Gamma Statistics		K-S Test Statistic	0.268139
k hat	1.608773	K-S 5% Critical Value	0.270835
k star (bias corrected)	1.192807	Data follow gamma distribution	
Theta hat	0.043698	at 5% significance level	
Theta star	0.058937	95% UCLs (Assuming Gamma Distribution)	
nu hat	32.17545	Approximate Gamma UCL	0.12208
nu star	23.85615	Adjusted Gamma UCL	0.135014
Approx.Chi Square Value (.05)	13.73761	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.875495
Adjusted Chi Square Value	12.42158	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-4.342806		
Maximum of log data	-1.832581	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-2.996904	95% H-UCL	0.193268
Standard Deviation of log data	0.931088	95% Chebyshev (MVUE) UCL	0.170518
Variance of log data	0.866924	97.5% Chebyshev (MVUE) UCL	0.212787
		99% Chebyshev (MVUE) UCL	0.295816
95% Non-parametric UCLs			
		CLT UCL	0.097973
		Adj-CLT UCL (Adjusted for skewness)	0.099977
		Mod-t UCL (Adjusted for skewness)	0.101453
		Jackknife UCL	0.10114
		Standard Bootstrap UCL	0.096511
		Bootstrap-t UCL	0.103781
RECOMMENDATION		Hall's Bootstrap UCL	0.09554
Data are normal (0.05)		Percentile Bootstrap UCL	0.0971
		BCA Bootstrap UCL	0.0979
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.143634
		97.5% Chebyshev (Mean, Sd) UCL	0.175366
		99% Chebyshev (Mean, Sd) UCL	0.237696

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Uranium-
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.847632
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1.9	Data are normal at 5% significance level	
Maximum	22.4		
Mean	10.41	95% UCL (Assuming Normal Distribution)	
Median	9.9	Student's-t UCL	14.91103
Standard Deviation	7.764656		
Variance	60.28989	Gamma Distribution Test	
Coefficient of Variation	0.745884	A-D Test Statistic	0.759871
Skewness	0.212073	A-D 5% Critical Value	0.738477
Gamma Statistics		K-S Test Statistic	0.279131
k hat	1.603181	K-S 5% Critical Value	0.27085
k star (bias corrected)	1.188893	Data do not follow gamma distribution	
Theta hat	6.493342	at 5% significance level	
Theta star	8.756044	95% UCLs (Assuming Gamma Distribution)	
nu hat	32.06361	Approximate Gamma UCL	18.09657
nu star	23.77786	Adjusted Gamma UCL	20.01787
Approx.Chi Square Value (.05)	13.67815	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.861419
Adjusted Chi Square Value	12.36533	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.641854		
Maximum of log data	3.109061	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.999552	95% H-UCL	29.056
Standard Deviation of log data	0.937547	95% Chebyshev (MVUE) UCL	25.45162
Variance of log data	0.878994	97.5% Chebyshev (MVUE) UCL	31.78027
		99% Chebyshev (MVUE) UCL	44.21166
95% Non-parametric UCLs			
		CLT UCL	14.44877
		Adj-CLT UCL (Adjusted for skewness)	14.62472
		Mod-t UCL (Adjusted for skewness)	14.93847
		Jackknife UCL	14.91103
		Standard Bootstrap UCL	14.23519
		Bootstrap-t UCL	14.92024
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	13.75279
Use Student's-t UCL		Percentile Bootstrap UCL	14.24
		BCA Bootstrap UCL	14.46
		95% Chebyshev (Mean, Sd) UCL	21.11284
		97.5% Chebyshev (Mean, Sd) UCL	25.74397
		99% Chebyshev (Mean, Sd) UCL	34.84092

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Vanadium
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.923214
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	14.5	Data are normal at 5% significance level	
Maximum	28.8		
Mean	23.6	95% UCL (Assuming Normal Distribution)	
Median	24.95	Student's-t UCL	26.22647
Standard Deviation	4.530882		
Variance	20.52889	Gamma Distribution Test	
Coefficient of Variation	0.191987	A-D Test Statistic	0.458601
Skewness	-0.925399	A-D 5% Critical Value	0.724516
Gamma Statistics			
k hat	26.33095	Data follow gamma distribution	
k star (bias corrected)	18.49833	at 5% significance level	
Theta hat	0.896284		
Theta star	1.275791	95% UCLs (Assuming Gamma Distribution)	
nu hat	526.619	Approximate Gamma UCL	26.75165
nu star	369.9667	Adjusted Gamma UCL	27.34851
Approx.Chi Square Value (.05)	326.3804		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	319.2573	Shapiro-Wilk Test Statistic	0.880991
Log-transformed Statistics			
Minimum of log data	2.674149	Shapiro-Wilk 5% Critical Value	0.842
Maximum of log data	3.360375	Data are lognormal at 5% significance level	
Mean of log data	3.142137		
Standard Deviation of log data	0.213911	95% UCLs (Assuming Lognormal Distribution)	
Variance of log data	0.045758	95% H-UCL	27.11313
		95% Chebyshev (MVUE) UCL	30.62819
		97.5% Chebyshev (MVUE) UCL	33.65454
		99% Chebyshev (MVUE) UCL	39.59923
95% Non-parametric UCLs			
		CLT UCL	25.95673
		Adj-CLT UCL (Adjusted for skewness)	25.50872
		Mod-t UCL (Adjusted for skewness)	26.15659
		Jackknife UCL	26.22647
		Standard Bootstrap UCL	25.86477
		Bootstrap-t UCL	25.79211
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	25.56781
Use Student's-t UCL		Percentile Bootstrap UCL	25.72
		BCA Bootstrap UCL	25.59
		95% Chebyshev (Mean, Sd) UCL	29.84539
		97.5% Chebyshev (Mean, Sd) UCL	32.54777
		99% Chebyshev (Mean, Sd) UCL	37.85609

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Zinc
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.76931
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	15.35	Data not normal at 5% significance level	
Maximum	78.6		
Mean	32.475	95% UCL (Assuming Normal Distribution)	
Median	29.275	Student's-t UCL	42.93737
Standard Deviation	18.04849		
Variance	325.7479	Gamma Distribution Test	
Coefficient of Variation	0.555766	A-D Test Statistic	0.501197
Skewness	2.081413	A-D 5% Critical Value	0.72944
Gamma Statistics		K-S Test Statistic	0.208901
k hat	4.835041	K-S 5% Critical Value	0.267494
k star (bias corrected)	3.451196	Data follow gamma distribution at 5% significance level	
Theta hat	6.716592		
Theta star	9.409783	95% UCLs (Assuming Gamma Distribution)	
nu hat	96.70083	Approximate Gamma UCL	44.04146
nu star	69.02391	Adjusted Gamma UCL	46.50462
Approx.Chi Square Value (.05)	50.8964		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	48.20062	Shapiro-Wilk Test Statistic	0.928567
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	2.731115	Data are lognormal at 5% significance level	
Maximum of log data	4.364372		
Mean of log data	3.373509	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.463968	95% H-UCL	45.46031
Variance of log data	0.215266	95% Chebyshev (MVUE) UCL	52.98789
		97.5% Chebyshev (MVUE) UCL	62.01656
		99% Chebyshev (MVUE) UCL	79.75164
95% Non-parametric UCLs			
		CLT UCL	41.86289
		Adj-CLT UCL (Adjusted for skewness)	45.87691
		Mod-t UCL (Adjusted for skewness)	43.56347
		Jackknife UCL	42.93737
		Standard Bootstrap UCL	41.24422
		Bootstrap-t UCL	51.18349
RECOMMENDATION			
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	81.08812
		Percentile Bootstrap UCL	42.54
		BCA Bootstrap UCL	45.02
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	57.35312
		97.5% Chebyshev (Mean, Sd) UCL	68.11791
		99% Chebyshev (Mean, Sd) UCL	89.26324

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Zirconium
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.872824
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.168	Data are normal at 5% significance level	
Maximum	1.9		
Mean	0.99755	95% UCL (Assuming Normal Distribution)	
Median	1.215	Student's-t UCL	1.390073
Standard Deviation	0.677136		
Variance	0.458513	Gamma Distribution Test	
Coefficient of Variation	0.678799	A-D Test Statistic	0.804591
Skewness	-0.182626	A-D 5% Critical Value	0.738672
Gamma Statistics		K-S Test Statistic	0.261731
k hat	1.5764	K-S 5% Critical Value	0.27092
k star (bias corrected)	1.170146	Data follow approximate gamma distribution at 5% significance level	
Theta hat	0.632803		
Theta star	0.8525	95% UCLs (Assuming Gamma Distribution)	
nu hat	31.52799	Approximate Gamma UCL	1.743011
nu star	23.40293	Adjusted Gamma UCL	1.929952
Approx.Chi Square Value (.05)	13.39382		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	12.09646	Shapiro-Wilk Test Statistic	0.808717
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	-1.783791	Data not lognormal at 5% significance level	
Maximum of log data	0.641854		
Mean of log data	-0.352007	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	1.001259	95% H-UCL	3.273136
Variance of log data	1.002519	95% Chebyshev (MVUE) UCL	2.6568
		97.5% Chebyshev (MVUE) UCL	3.336647
		99% Chebyshev (MVUE) UCL	4.672075
95% Non-parametric UCLs			
		CLT UCL	1.349761
		Adj-CLT UCL (Adjusted for skewness)	1.336548
		Mod-t UCL (Adjusted for skewness)	1.388012
		Jackknife UCL	1.390073
		Standard Bootstrap UCL	1.324203
		Bootstrap-t UCL	1.353654
RECOMMENDATION		Hall's Bootstrap UCL	1.284242
Data are normal (0.05)		Percentile Bootstrap UCL	1.3435
		BCA Bootstrap UCL	1.3098
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.930918
		97.5% Chebyshev (Mean, Sd) UCL	2.334787
		99% Chebyshev (Mean, Sd) UCL	3.128109

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3550B	Percent Moistu
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.967873
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762
Minimum	64.14602	Data are normal at 5% significance level	
Maximum	68.66883		
Mean	66.25929	95% UCL (Assuming Normal Distribution)	
Median	66.31717	Student's-t UCL	67.82267
Standard Deviation	1.639813		
Variance	2.688986	Gamma Distribution Test	
Coefficient of Variation	0.024748	A-D Test Statistic	0.246971
Skewness	0.408103	A-D 5% Critical Value	0.67808
Gamma Statistics		K-S Test Statistic	0.22135
k hat	2048.152	K-S 5% Critical Value	0.35682
k star (bias corrected)	819.394	Data follow gamma distribution at 5% significance level	
Theta hat	0.032351		
Theta star	0.080864	95% UCLs (Assuming Gamma Distribution)	
nu hat	20481.52	Approximate Gamma UCL	67.99757
nu star	8193.94	Adjusted Gamma UCL	68.79411
Approx.Chi Square Value (.05)	7984.472		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test	
Adjusted Chi Square Value	7892.022	Shapiro-Wilk Test Statistic	0.969896
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.762
Minimum of log data	4.161162	Data are lognormal at 5% significance level	
Maximum of log data	4.229295		
Mean of log data	4.193332	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.024685	95% H-UCL	N/A
Variance of log data	0.000609	95% Chebyshev (MVUE) UCL	69.44755
		97.5% Chebyshev (MVUE) UCL	70.82712
		99% Chebyshev (MVUE) UCL	73.53702
		95% Non-parametric UCLs	
		CLT UCL	67.46554
		Adj-CLT UCL (Adjusted for skewness)	67.60855
		Mod-t UCL (Adjusted for skewness)	67.84498
		Jackknife UCL	67.82267
		Standard Bootstrap UCL	67.32967
		Bootstrap-t UCL	67.89453
		Hall's Bootstrap UCL	68.13445
RECOMMENDATION		Percentile Bootstrap UCL	67.30229
Data are normal (0.05)		BCA Bootstrap UCL	67.30229
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	69.45588
		97.5% Chebyshev (Mean, Sd) UCL	70.83904
		99% Chebyshev (Mean, Sd) UCL	73.556

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 7471A	Mercury	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.926351	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.068	Data are normal at 5% significance level		
Maximum	0.161			
Mean	0.1155	95% UCL (Assuming Normal Distribution)		
Median	0.1215	Student's-t UCL	0.134775	
Standard Deviation	0.033251			
Variance	0.001106	Gamma Distribution Test		
Coefficient of Variation	0.287885	A-D Test Statistic	0.437667	
Skewness	-0.257283	A-D 5% Critical Value	0.724946	
		K-S Test Statistic	0.190841	
		K-S 5% Critical Value	0.266528	
Gamma Statistics				
k hat	12.22631	Data follow gamma distribution		
k star (bias corrected)	8.625086	at 5% significance level		
Theta hat	0.009447			
Theta star	0.013391	95% UCLs (Assuming Gamma Distribution)		
nu hat	244.5263	Approximate Gamma UCL	0.139209	
nu star	172.5017	Adjusted Gamma UCL	0.143884	
Approx.Chi Square Value (.05)	143.1224			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	138.4726	Shapiro-Wilk Test Statistic	0.902848	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	-2.688248	Data are lognormal at 5% significance level		
Maximum of log data	-1.826351			
Mean of log data	-2.199937	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.311771	95% H-UCL	0.143045	
Variance of log data	0.097201	95% Chebyshev (MVUE) UCL	0.165861	
		97.5% Chebyshev (MVUE) UCL	0.187546	
		99% Chebyshev (MVUE) UCL	0.230143	
		95% Non-parametric UCLs		
		CLT UCL	0.132795	
		Adj-CLT UCL (Adjusted for skewness)	0.131881	
		Mod-t UCL (Adjusted for skewness)	0.134632	
		Jackknife UCL	0.134775	
		Standard Bootstrap UCL	0.131857	
		Bootstrap-t UCL	0.133446	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	0.130562	
Use Student's-t UCL		Percentile Bootstrap UCL	0.1318	
		BCA Bootstrap UCL	0.1313	
		95% Chebyshev (Mean, Sd) UCL	0.161333	
		97.5% Chebyshev (Mean, Sd) UCL	0.181165	
		99% Chebyshev (Mean, Sd) UCL	0.220121	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Benzo_a_pyre
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.630028
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	48.5	Data not normal at 5% significance level	
Maximum	516		
Mean	143.18	95% UCL (Assuming Normal Distribution)	
Median	72.5	Student's-t UCL	239.1458
Standard Deviation	165.5492		
Variance	27406.55	Gamma Distribution Test	
Coefficient of Variation	1.156231	A-D Test Statistic	1.400346
Skewness	1.877958	A-D 5% Critical Value	0.74215
Gamma Statistics			
k hat	1.338517	K-S Test Statistic	0.340538
k star (bias corrected)	1.003629	K-S 5% Critical Value	0.271969
Theta hat	106.9691	Data do not follow gamma distribution	
Theta star	142.6623	at 5% significance level	
nu hat	26.77035	95% UCLs (Assuming Gamma Distribution)	
nu star	20.07258	Approximate Gamma UCL	263.5924
Approx.Chi Square Value (.05)	10.90316	Adjusted Gamma UCL	294.8092
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	9.74865	Shapiro-Wilk Test Statistic	0.759054
Log-transformed Statistics			
Minimum of log data	3.881564	Shapiro-Wilk 5% Critical Value	0.842
Maximum of log data	6.246107	Data not lognormal at 5% significance level	
Mean of log data	4.546171	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.860614	95% H-UCL	306.9936
Variance of log data	0.740657	95% Chebyshev (MVUE) UCL	291.2746
		97.5% Chebyshev (MVUE) UCL	360.9192
		99% Chebyshev (MVUE) UCL	497.7224
95% Non-parametric UCLs			
		CLT UCL	229.2902
		Adj-CLT UCL (Adjusted for skewness)	262.5097
		Mod-t UCL (Adjusted for skewness)	244.3273
		Jackknife UCL	239.1458
		Standard Bootstrap UCL	224.4264
		Bootstrap-t UCL	801.5554
		Hall's Bootstrap UCL	765.7702
RECOMMENDATION			
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	233.43
		BCA Bootstrap UCL	252.45
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	371.3739
		97.5% Chebyshev (Mean, Sd) UCL	470.1135
		99% Chebyshev (Mean, Sd) UCL	664.0685

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Benzo_b_fluor
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.696941	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	48.5	Data not normal at 5% significance level		
Maximum	417			
Mean	152.34	95% UCL (Assuming Normal Distribution)		
Median	72.25	Student's-t UCL	239.3033	
Standard Deviation	150.0191			
Variance	22505.74	Gamma Distribution Test		
Coefficient of Variation	0.984765	A-D Test Statistic	1.34091	
Skewness	1.104285	A-D 5% Critical Value	0.741086	
Gamma Statistics				
k hat	1.397326	K-S Test Statistic	0.360447	
k star (bias corrected)	1.044795	K-S 5% Critical Value	0.27166	
Theta hat	109.0226	Data do not follow gamma distribution		
Theta star	145.8086	at 5% significance level		
nu hat	27.94651	95% UCLs (Assuming Gamma Distribution)		
nu star	20.89589	Approximate Gamma UCL	276.5023	
Approx.Chi Square Value (.05)	11.51267	Adjusted Gamma UCL	308.4022	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	10.32185	Shapiro-Wilk Test Statistic	0.756629	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	3.881564	Data not lognormal at 5% significance level		
Maximum of log data	6.033086	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.627424	95% H-UCL	363.0458	
Standard Deviation of log data	0.896546	95% Chebyshev (MVUE) UCL	332.3666	
Variance of log data	0.803795	97.5% Chebyshev (MVUE) UCL	413.3579	
		99% Chebyshev (MVUE) UCL	572.4496	
95% Non-parametric UCLs				
		CLT UCL	230.3722	
		Adj-CLT UCL (Adjusted for skewness)	248.0736	
		Mod-t UCL (Adjusted for skewness)	242.0643	
		Jackknife UCL	239.3033	
		Standard Bootstrap UCL	227.1071	
		Bootstrap-t UCL	269.7646	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	202.2933	
Use 95% Chebyshev (Mean, Sd) UCL		Percentile Bootstrap UCL	229.13	
		BCA Bootstrap UCL	244.38	
		95% Chebyshev (Mean, Sd) UCL	359.1271	
		97.5% Chebyshev (Mean, Sd) UCL	448.604	
		99% Chebyshev (Mean, Sd) UCL	624.3642	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Benzoic Acid
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.720184
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	930	Data not normal at 5% significance level	
Maximum	3970		
Mean	1909.5	95% UCL (Assuming Normal Distribution)	
Median	1225	Student's-t UCL	2656.139
Standard Deviation	1288.016		
Variance	1658986	Gamma Distribution Test	
Coefficient of Variation	0.674531	A-D Test Statistic	1.204083
Skewness	0.982561	A-D 5% Critical Value	0.732529
Gamma Statistics		K-S Test Statistic	0.272932
k hat	2.897289	K-S 5% Critical Value	0.26859
k star (bias corrected)	2.094769	Data do not follow gamma distribution	
Theta hat	659.0644	at 5% significance level	
Theta star	911.5564	95% UCLs (Assuming Gamma Distribution)	
nu hat	57.94578	Approximate Gamma UCL	2851.424
nu star	41.89538	Adjusted Gamma UCL	3064.952
Approx.Chi Square Value (.05)	28.05588		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	26.1013	Shapiro-Wilk Test Statistic	0.771233
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842
Minimum of log data	6.835185	Data not lognormal at 5% significance level	
Maximum of log data	8.286521	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	7.372206	95% H-UCL	3121.071
Standard Deviation of log data	0.611733	95% Chebyshev (MVUE) UCL	3501.861
Variance of log data	0.374218	97.5% Chebyshev (MVUE) UCL	4204.386
		99% Chebyshev (MVUE) UCL	5584.36
95% Non-parametric UCLs			
		CLT UCL	2579.46
		Adj-CLT UCL (Adjusted for skewness)	2714.686
		Mod-t UCL (Adjusted for skewness)	2677.231
		Jackknife UCL	2656.139
		Standard Bootstrap UCL	2543.441
		Bootstrap-t UCL	2802.678
RECOMMENDATION			
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	2352.216
Use 95% Chebyshev (Mean, Sd) UCL		Percentile Bootstrap UCL	2556
		BCA Bootstrap UCL	2642
		95% Chebyshev (Mean, Sd) UCL	3684.908
		97.5% Chebyshev (Mean, Sd) UCL	4453.128
		99% Chebyshev (Mean, Sd) UCL	5962.148

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Bis(2-Ethylhex
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.863834
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	247.5	Data are normal at 5% significance level	
Maximum	531		
Mean	421.55	95% UCL (Assuming Normal Distribution)	
Median	473	Student's-t UCL	482.3322
Standard Deviation	104.8545		
Variance	10994.47	Gamma Distribution Test	
Coefficient of Variation	0.248736	A-D Test Statistic	0.739512
Skewness	-0.762007	A-D 5% Critical Value	0.724781
		K-S Test Statistic	0.283152
		K-S 5% Critical Value	0.266378
Gamma Statistics			
k hat	15.48	Data do not follow gamma distribution	
k star (bias corrected)	10.90267	at 5% significance level	
Theta hat	27.23191		
Theta star	38.66485	95% UCLs (Assuming Gamma Distribution)	
nu hat	309.6	Approximate Gamma UCL	497.2139
nu star	218.0533	Adjusted Gamma UCL	511.922
Approx.Chi Square Value (.05)	184.8709		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	179.5593	Shapiro-Wilk Test Statistic	0.834237
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	5.511411		
Maximum of log data	6.274762	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.011291	95% H-UCL	509.5155
Standard Deviation of log data	0.280359	95% Chebyshev (MVUE) UCL	586.9917
Variance of log data	0.078601	97.5% Chebyshev (MVUE) UCL	658.1017
		99% Chebyshev (MVUE) UCL	797.7836
		95% Non-parametric UCLs	
		CLT UCL	476.0899
		Adj-CLT UCL (Adjusted for skewness)	467.5525
		Mod-t UCL (Adjusted for skewness)	481.0005
		Jackknife UCL	482.3322
		Standard Bootstrap UCL	473.3748
		Bootstrap-t UCL	471.6393
RECOMMENDATION		Hall's Bootstrap UCL	464.949
Data are normal (0.05)		Percentile Bootstrap UCL	470.9
		BCA Bootstrap UCL	465
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	566.082
		97.5% Chebyshev (Mean, Sd) UCL	628.6211
		99% Chebyshev (Mean, Sd) UCL	751.467

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Chrysene
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.866316
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	48.5	Data are normal at 5% significance level	
Maximum	119		
Mean	76.31	95% UCL (Assuming Normal Distribution)	
Median	69.15	Student's-t UCL	92.17989
Standard Deviation	27.37693		
Variance	749.4966	Gamma Distribution Test	
Coefficient of Variation	0.358759	A-D Test Statistic	0.617665
Skewness	0.391022	A-D 5% Critical Value	0.726146
		K-S Test Statistic	0.216282
		K-S 5% Critical Value	0.266828
Gamma Statistics			
k hat	8.763496	Data follow gamma distribution	
k star (bias corrected)	6.201114	at 5% significance level	
Theta hat	8.707712		
Theta star	12.30585	95% UCLs (Assuming Gamma Distribution)	
nu hat	175.2699	Approximate Gamma UCL	95.31074
nu star	124.0223	Adjusted Gamma UCL	99.14543
Approx.Chi Square Value (.05)	99.29773		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	95.45715	Shapiro-Wilk Test Statistic	0.86675
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	3.881564		
Maximum of log data	4.779123	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.276665	95% H-UCL	98.06482
Standard Deviation of log data	0.359226	95% Chebyshev (MVUE) UCL	114.4254
Variance of log data	0.129043	97.5% Chebyshev (MVUE) UCL	130.9302
		99% Chebyshev (MVUE) UCL	163.3508
		95% Non-parametric UCLs	
		CLT UCL	90.55007
		Adj-CLT UCL (Adjusted for skewness)	91.69391
		Mod-t UCL (Adjusted for skewness)	92.35831
		Jackknife UCL	92.17989
		Standard Bootstrap UCL	89.85685
		Bootstrap-t UCL	93.2307
RECOMMENDATION		Hall's Bootstrap UCL	88.85825
Data are normal (0.05)		Percentile Bootstrap UCL	89.76
		BCA Bootstrap UCL	90.66
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	114.0465
		97.5% Chebyshev (Mean, Sd) UCL	130.3751
		99% Chebyshev (Mean, Sd) UCL	162.4495

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Fluoranthene
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.873238	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	49.5	Data are normal at 5% significance level		
Maximum	176			
Mean	92.54	95% UCL (Assuming Normal Distribution)		
Median	74.4	Student's-t UCL	115.7067	
Standard Deviation	39.96455			
Variance	1597.165	Gamma Distribution Test		
Coefficient of Variation	0.431862	A-D Test Statistic	0.44658	
Skewness	1.184398	A-D 5% Critical Value	0.727813	
Gamma Statistics		K-S Test Statistic	0.25026	
k hat	6.864269	K-S 5% Critical Value	0.267132	
k star (bias corrected)	4.871655	Data follow gamma distribution at 5% significance level		
Theta hat	13.48141			
Theta star	18.9956	95% UCLs (Assuming Gamma Distribution)		
nu hat	137.2854	Approximate Gamma UCL	119.1715	
nu star	97.4331	Adjusted Gamma UCL	124.6547	
Approx.Chi Square Value (.05)	75.65955	Lognormal Distribution Test		
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.94136	
Adjusted Chi Square Value	72.33149	Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.901973			
Maximum of log data	5.170484	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.453035	95% H-UCL	122.4279	
Standard Deviation of log data	0.396771	95% Chebyshev (MVUE) UCL	143.1462	
Variance of log data	0.157428	97.5% Chebyshev (MVUE) UCL	165.2119	
		99% Chebyshev (MVUE) UCL	208.5557	
95% Non-parametric UCLs				
		CLT UCL	113.3275	
		Adj-CLT UCL (Adjusted for skewness)	118.3852	
		Mod-t UCL (Adjusted for skewness)	116.4956	
		Jackknife UCL	115.7067	
		Standard Bootstrap UCL	112.5087	
		Bootstrap-t UCL	130.3184	
RECOMMENDATION		Hall's Bootstrap UCL	124.7815	
Data are normal (0.05)		Percentile Bootstrap UCL	112.65	
Use Student's-t UCL		BCA Bootstrap UCL	116.98	
		95% Chebyshev (Mean, Sd) UCL	147.6273	
		97.5% Chebyshev (Mean, Sd) UCL	171.4637	
		99% Chebyshev (Mean, Sd) UCL	218.2855	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Indeno_1,2,3-d
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.434597
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	46.5	Data not normal at 5% significance level	
Maximum	532		
Mean	106.93	95% UCL (Assuming Normal Distribution)	
Median	61	Student's-t UCL	193.7758
Standard Deviation	149.8166		
Variance	22445	Gamma Distribution Test	
Coefficient of Variation	1.401071	A-D Test Statistic	2.157148
Skewness	3.125982	A-D 5% Critical Value	0.740038
Gamma Statistics		K-S Test Statistic	0.441355
k hat	1.455324	K-S 5% Critical Value	0.271355
k star (bias corrected)	1.085393	Data do not follow gamma distribution	
Theta hat	73.47507	at 5% significance level	
Theta star	98.51729	95% UCLs (Assuming Gamma Distribution)	
nu hat	29.10647	Approximate Gamma UCL	191.5524
nu star	21.70786	Adjusted Gamma UCL	213.1131
Approx.Chi Square Value (.05)	12.11795	Lognormal Distribution Test	
Adjusted Level of Significance	0.0267	Shapiro-Wilk Test Statistic	0.603386
Adjusted Chi Square Value	10.89197	Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	3.839452		
Maximum of log data	6.276643	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.290824	95% H-UCL	176.777
Standard Deviation of log data	0.724459	95% Chebyshev (MVUE) UCL	186.9336
Variance of log data	0.524841	97.5% Chebyshev (MVUE) UCL	227.9966
		99% Chebyshev (MVUE) UCL	308.6568
95% Non-parametric UCLs			
		CLT UCL	184.8568
		Adj-CLT UCL (Adjusted for skewness)	234.8979
		Mod-t UCL (Adjusted for skewness)	201.5812
		Jackknife UCL	193.7758
		Standard Bootstrap UCL	180.18
		Bootstrap-t UCL	821.5796
RECOMMENDATION		Hall's Bootstrap UCL	663.1956
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	198.53
Use 95% Chebyshev (Mean, Sd) UCL		BCA Bootstrap UCL	247.38
		95% Chebyshev (Mean, Sd) UCL	313.4379
		97.5% Chebyshev (Mean, Sd) UCL	402.794
		99% Chebyshev (Mean, Sd) UCL	578.3168

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Phenanthrene
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.785855	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	48.5	Data not normal at 5% significance level		
Maximum	87			
Mean	60.73	95% UCL (Assuming Normal Distribution)		
Median	53	Student's-t UCL	69.06671	
Standard Deviation	14.38155			
Variance	206.829			
Coefficient of Variation	0.236811			
Skewness	1.052909			
Gamma Statistics				
k hat	21.95752	Data do not follow gamma distribution		
k star (bias corrected)	15.43693	at 5% significance level		
Theta hat	2.765795			
Theta star	3.934072	95% UCLs (Assuming Gamma Distribution)		
nu hat	439.1504	Approximate Gamma UCL	69.69484	
nu star	308.7386	Adjusted Gamma UCL	71.40645	
Approx.Chi Square Value (.05)	269.0256			
Adjusted Level of Significance	0.0267			
Adjusted Chi Square Value	262.5771			
Log-transformed Statistics				
Minimum of log data	3.881564			
Maximum of log data	4.465908	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.083494	95% H-UCL	69.91024	
Standard Deviation of log data	0.220294	95% Chebyshev (MVUE) UCL	79.15123	
Variance of log data	0.048529	97.5% Chebyshev (MVUE) UCL	87.15229	
		99% Chebyshev (MVUE) UCL	102.8688	
95% Non-parametric UCLs				
		CLT UCL	68.21054	
		Adj-CLT UCL (Adjusted for skewness)	69.82853	
		Mod-t UCL (Adjusted for skewness)	69.31909	
		Jackknife UCL	69.06671	
		Standard Bootstrap UCL	67.65121	
		Bootstrap-t UCL	71.97854	
		Hall's Bootstrap UCL	66.75147	
		Percentile Bootstrap UCL	67.88	
		BCA Bootstrap UCL	69	
RECOMMENDATION				
Data are Non-parametric (0.05)		95% Chebyshev (Mean, Sd) UCL	80.5536	
Use Student's-t UCL or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	89.13129	
		99% Chebyshev (Mean, Sd) UCL	105.9805	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Pyrene	T
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.932091	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	49.5	Data are normal at 5% significance level		
Maximum	192			
Mean	116.45	95% UCL (Assuming Normal Distribution)		
Median	109.5	Student's-t UCL	146.3812	
Standard Deviation	51.63397			
Variance	2666.067	Gamma Distribution Test		
Coefficient of Variation	0.4434	A-D Test Statistic	0.224145	
Skewness	0.329013	A-D 5% Critical Value	0.729111	
		K-S Test Statistic	0.129153	
Gamma Statistics		K-S 5% Critical Value	0.267368	
k hat	5.385614	Data follow gamma distribution		
k star (bias corrected)	3.836596	at 5% significance level		
Theta hat	21.62242			
Theta star	30.35242	95% UCLs (Assuming Gamma Distribution)		
nu hat	107.7123	Approximate Gamma UCL	155.2627	
nu star	76.73193	Adjusted Gamma UCL	163.4371	
Approx.Chi Square Value (.05)	57.55041			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	54.67199	Shapiro-Wilk Test Statistic	0.951704	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.901973			
Maximum of log data	5.257495	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.661759	95% H-UCL	166.7922	
Standard Deviation of log data	0.472276	95% Chebyshev (MVUE) UCL	194.2169	
Variance of log data	0.223045	97.5% Chebyshev (MVUE) UCL	227.6764	
		99% Chebyshev (MVUE) UCL	293.4012	
		95% Non-parametric UCLs		
		CLT UCL	143.3073	
		Adj-CLT UCL (Adjusted for skewness)	145.1225	
		Mod-t UCL (Adjusted for skewness)	146.6644	
		Jackknife UCL	146.3812	
		Standard Bootstrap UCL	142.0725	
		Bootstrap-t UCL	147.9218	
RECOMMENDATION		Hall's Bootstrap UCL	144.6399	
Data are normal (0.05)		Percentile Bootstrap UCL	142.13	
		BCA Bootstrap UCL	142.58	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	187.6225	
		97.5% Chebyshev (Mean, Sd) UCL	218.4189	
		99% Chebyshev (Mean, Sd) UCL	278.9125	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8310	Benzo_a_anthra
Raw Statistics			
Number of Valid Samples	4	Shapiro-Wilk Test Statistic	0.865793
Number of Unique Samples	3	Shapiro-Wilk 5% Critical Value	0.748
Minimum	39.8	Data are normal at 5% significance level	
Maximum	49		
Mean	43.325	95% UCL (Assuming Normal Distribution)	
Median	42.25	Student's-t UCL	48.54092
Standard Deviation	4.432738		
Variance	19.64917	Gamma Distribution Test	
Coefficient of Variation	0.102314	A-D Test Statistic	0.429902
Skewness	0.748307	A-D 5% Critical Value	0.65652
Gamma Statistics		K-S Test Statistic	0.32253
k hat	130.1065	K-S 5% Critical Value	0.39399
k star (bias corrected)	32.69328	Data follow gamma distribution	
Theta hat	0.332997	at 5% significance level	
Theta star	1.325196	95% UCLs (Assuming Gamma Distribution)	
nu hat	1040.852	Approximate Gamma UCL	50.34207
nu star	261.5463	Adjusted Gamma UCL	N/A
Approx.Chi Square Value (.05)	225.0899		
Adjusted Level of Significance	N/A	Lognormal Distribution Test	
Adjusted Chi Square Value	N/A	Shapiro-Wilk Test Statistic	0.865269
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.748
Minimum of log data	3.683867	Data are lognormal at 5% significance level	
Maximum of log data	3.89182	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.764882	95% H-UCL	49.864
Standard Deviation of log data	0.100783	95% Chebyshev (MVUE) UCL	52.83194
Variance of log data	0.010157	97.5% Chebyshev (MVUE) UCL	56.94638
		99% Chebyshev (MVUE) UCL	65.02842
95% Non-parametric UCLs			
		CLT UCL	46.9706
		Adj-CLT UCL (Adjusted for skewness)	47.85668
		Mod-t UCL (Adjusted for skewness)	48.67913
		Jackknife UCL	48.54092
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/R
Data are normal (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	52.98593
		97.5% Chebyshev (Mean, Sd) UCL	57.16622
		99% Chebyshev (Mean, Sd) UCL	65.37759

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8310	Benzo_a_pyrene
Raw Statistics			
Number of Valid Samples	6	Shapiro-Wilk Test Statistic	0.953054
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.788
Minimum	8.05	Data are normal at 5% significance level	
Maximum	38.5		
Mean	26.04167	95% UCL (Assuming Normal Distribution)	
Median	27.45	Student's-t UCL	35.31156
Standard Deviation	11.26847		
Variance	126.9784	Gamma Distribution Test	
Coefficient of Variation	0.432709	A-D Test Statistic	0.37077
Skewness	-0.685862	A-D 5% Critical Value	0.698856
		K-S Test Statistic	0.207361
Gamma Statistics		K-S 5% Critical Value	0.333103
k hat	4.582345	Data follow gamma distribution	
k star (bias corrected)	2.402284	at 5% significance level	
Theta hat	5.683043		
Theta star	10.84038	95% UCLs (Assuming Gamma Distribution)	
nu hat	54.98815	Approximate Gamma UCL	42.72315
nu star	28.82741	Adjusted Gamma UCL	51.79647
Approx.Chi Square Value (.05)	17.57159		
Adjusted Level of Significance	0.01222	Lognormal Distribution Test	
Adjusted Chi Square Value	14.49353	Shapiro-Wilk Test Statistic	0.856109
		Shapiro-Wilk 5% Critical Value	0.788
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.085672		
Maximum of log data	3.650658	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.146633	95% H-UCL	58.29244
Standard Deviation of log data	0.577176	95% Chebyshev (MVUE) UCL	53.9585
Variance of log data	0.333132	97.5% Chebyshev (MVUE) UCL	65.77486
		99% Chebyshev (MVUE) UCL	88.98581
95% Non-parametric UCLs			
		CLT UCL	33.60854
		Adj-CLT UCL (Adjusted for skewness)	32.23219
		Mod-t UCL (Adjusted for skewness)	35.09688
		Jackknife UCL	35.31156
		Standard Bootstrap UCL	32.89943
		Bootstrap-t UCL	33.85626
RECOMMENDATION		Hall's Bootstrap UCL	31.93424
Data are normal (0.05)		Percentile Bootstrap UCL	32.5
		BCA Bootstrap UCL	31.26667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	46.09406
		97.5% Chebyshev (Mean, Sd) UCL	54.77074
		99% Chebyshev (Mean, Sd) UCL	71.81441

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8310	Benzo_b_fluorar
Raw Statistics				
Number of Valid Samples	6	Normal Distribution Test		
Number of Unique Samples	6	Shapiro-Wilk Test Statistic	0.840711	
Minimum	8.05	Shapiro-Wilk 5% Critical Value	0.788	
Maximum	53.9	Data are normal at 5% significance level		
Mean	23.60833	95% UCL (Assuming Normal Distribution)		
Median	20.6	Student's-t UCL	36.79516	
Standard Deviation	16.02989			
Variance	256.9574	Gamma Distribution Test		
Coefficient of Variation	0.678993	A-D Test Statistic	0.289833	
Skewness	1.668514	A-D 5% Critical Value	0.701232	
Gamma Statistics				
k hat	3.072581	K-S Test Statistic	0.215814	
k star (bias corrected)	1.647402	K-S 5% Critical Value	0.334477	
Theta hat	7.683551	Data follow gamma distribution		
Theta star	14.33065	at 5% significance level		
nu hat	36.87097	95% UCLs (Assuming Gamma Distribution)		
nu star	19.76882	Approximate Gamma UCL	43.70173	
Approx.Chi Square Value (.05)	10.67941	Adjusted Gamma UCL	55.71808	
Adjusted Level of Significance	0.01222	Lognormal Distribution Test		
Adjusted Chi Square Value	8.376255	Shapiro-Wilk Test Statistic	0.97242	
Log-transformed Statistics				
Minimum of log data	2.085672	Shapiro-Wilk 5% Critical Value	0.788	
Maximum of log data	3.98713	Data are lognormal at 5% significance level		
Mean of log data	2.990132	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.636553	95% H-UCL	58.6528	
Variance of log data	0.405199	95% Chebyshev (MVUE) UCL	49.93471	
		97.5% Chebyshev (MVUE) UCL	61.39249	
		99% Chebyshev (MVUE) UCL	83.89906	
95% Non-parametric UCLs				
		CLT UCL	34.37254	
		Adj-CLT UCL (Adjusted for skewness)	39.13564	
		Mod-t UCL (Adjusted for skewness)	37.53811	
		Jackknife UCL	36.79516	
		Standard Bootstrap UCL	33.41245	
		Bootstrap-t UCL	45.75592	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	86.14552	
		Percentile Bootstrap UCL	34.70833	
		BCA Bootstrap UCL	38.18333	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	52.13373	
		97.5% Chebyshev (Mean, Sd) UCL	64.4767	
		99% Chebyshev (Mean, Sd) UCL	88.72206	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8310	Chrysene	T
Raw Statistics				
Number of Valid Samples	4	Shapiro-Wilk Test Statistic	0.885423	
Number of Unique Samples	4	Shapiro-Wilk 5% Critical Value	0.748	
Minimum	34	Data are normal at 5% significance level		
Maximum	43.9			
Mean	37.95	95% UCL (Assuming Normal Distribution)		
Median	36.95	Student's-t UCL	42.89813	
Standard Deviation	4.205156			
Variance	17.68333	Gamma Distribution Test		
Coefficient of Variation	0.110808	A-D Test Statistic	0.405493	
Skewness	1.316816	A-D 5% Critical Value	0.65652	
		K-S Test Statistic	0.33268	
Gamma Statistics		K-S 5% Critical Value	0.39399	
k hat	113.2352	Data follow gamma distribution		
k star (bias corrected)	28.47546	at 5% significance level		
Theta hat	0.335143			
Theta star	1.332727	95% UCLs (Assuming Gamma Distribution)		
nu hat	905.8812	Approximate Gamma UCL	44.59464	
nu star	227.8036	Adjusted Gamma UCL	N/A	
Approx. Chi Square Value (.05)	193.8607			
Adjusted Level of Significance	N/A	Lognormal Distribution Test		
Adjusted Chi Square Value	N/A	Shapiro-Wilk Test Statistic	0.903301	
		Shapiro-Wilk 5% Critical Value	0.748	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	3.526361			
Maximum of log data	3.781914	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.631847	95% H-UCL	44.14346	
Standard Deviation of log data	0.107508	95% Chebyshev (MVUE) UCL	46.83004	
Variance of log data	0.011558	97.5% Chebyshev (MVUE) UCL	50.67395	
		99% Chebyshev (MVUE) UCL	58.22456	
		95% Non-parametric UCLs		
		CLT UCL	41.40843	
		Adj-CLT UCL (Adjusted for skewness)	42.88764	
		Mod-t UCL (Adjusted for skewness)	43.12886	
		Jackknife UCL	42.89813	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
RECOMMENDATION		Hall's Bootstrap UCL	N/R	
Data are normal (0.05)		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	47.11492	
		97.5% Chebyshev (Mean, Sd) UCL	51.08059	
		99% Chebyshev (Mean, Sd) UCL	58.87038	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8310	Fluoranthene
Raw Statistics				
Number of Valid Samples	5	Shapiro-Wilk Test Statistic	0.852749	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762	
Minimum	40	Data are normal at 5% significance level		
Maximum	72.4			
Mean	60.72	95% UCL (Assuming Normal Distribution)		
Median	67.5	Student's-t UCL	74.33938	
Standard Deviation	14.2852			
Variance	204.067	Gamma Distribution Test		
Coefficient of Variation	0.235264	A-D Test Statistic	0.498165	
Skewness	-0.90086	A-D 5% Critical Value	0.678689	
Gamma Statistics				
k hat	20.08781	Data follow gamma distribution		
k star (bias corrected)	8.168458	at 5% significance level		
Theta hat	3.022728			
Theta star	7.433472	95% UCLs (Assuming Gamma Distribution)		
nu hat	200.8781	Approximate Gamma UCL	80.18733	
nu star	81.68458	Adjusted Gamma UCL	91.23106	
Approx. Chi Square Value (.05)	61.85376			
Adjusted Level of Significance	0.0086	Lognormal Distribution Test		
Adjusted Chi Square Value	54.36622	Shapiro-Wilk Test Statistic	0.83941	
Log-transformed Statistics				
Minimum of log data	3.688879	Shapiro-Wilk 5% Critical Value	0.762	
Maximum of log data	4.282206	Data are lognormal at 5% significance level		
Mean of log data	4.081176			
Standard Deviation of log data	0.258376	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.066758	95% H-UCL	82.53732	
		95% Chebyshev (MVUE) UCL	91.36877	
		97.5% Chebyshev (MVUE) UCL	104.5914	
		99% Chebyshev (MVUE) UCL	130.5647	
95% Non-parametric UCLs				
		CLT UCL	71.22821	
		Adj-CLT UCL (Adjusted for skewness)	68.47807	
		Mod-t UCL (Adjusted for skewness)	73.91041	
		Jackknife UCL	74.33938	
		Standard Bootstrap UCL	70.33819	
		Bootstrap-t UCL	71.2596	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	66.84396	
		Percentile Bootstrap UCL	70.14	
		BCA Bootstrap UCL	68.18	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	88.56699	
		97.5% Chebyshev (Mean, Sd) UCL	100.6164	
		99% Chebyshev (Mean, Sd) UCL	124.2851	
Recommended UCL exceeds the maximum observation				

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8310	Phenanthrene
Raw Statistics			
Number of Valid Samples	6	Shapiro-Wilk Test Statistic	0.775148
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.788
Minimum	32.3	Data not normal at 5% significance level	
Maximum	120		
Mean	58.03333	95% UCL (Assuming Normal Distribution)	
Median	50.65	Student's-t UCL	84.23178
Standard Deviation	31.8468		
Variance	1014.219	Gamma Distribution Test	
Coefficient of Variation	0.548767	A-D Test Statistic	0.471755
Skewness	1.954271	A-D 5% Critical Value	0.698062
Gamma Statistics			
k hat	5.223168	K-S Test Statistic	0.281837
k star (bias corrected)	2.722695	K-S 5% Critical Value	0.332776
Theta hat	11.11075	Data follow gamma distribution	
Theta star	21.31466	at 5% significance level	
nu hat	62.67802	95% UCLs (Assuming Gamma Distribution)	
nu star	32.67234	Approximate Gamma UCL	92.0259
Approx.Chi Square Value (.05)	20.60382	Adjusted Gamma UCL	110.0266
Adjusted Level of Significance	0.01222	Lognormal Distribution Test	
Adjusted Chi Square Value	17.23296	Shapiro-Wilk Test Statistic	0.903135
Log-transformed Statistics			
Minimum of log data	3.475067	Shapiro-Wilk 5% Critical Value	0.788
Maximum of log data	4.787492	Data are lognormal at 5% significance level	
Mean of log data	3.962247	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.46043	95% H-UCL	99.98557
Variance of log data	0.211996	95% Chebyshev (MVUE) UCL	104.3261
		97.5% Chebyshev (MVUE) UCL	124.6448
		99% Chebyshev (MVUE) UCL	164.5569
95% Non-parametric UCLs			
		CLT UCL	79.41874
		Adj-CLT UCL (Adjusted for skewness)	90.50231
		Mod-t UCL (Adjusted for skewness)	85.9606
		Jackknife UCL	84.23178
		Standard Bootstrap UCL	77.4328
		Bootstrap-t UCL	113.2231
RECOMMENDATION			
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	173.4362
Use Approximate Gamma UCL		Percentile Bootstrap UCL	79.7
		BCA Bootstrap UCL	84.58333
		95% Chebyshev (Mean, Sd) UCL	114.7051
		97.5% Chebyshev (Mean, Sd) UCL	139.2271
		99% Chebyshev (Mean, Sd) UCL	187.3956

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8310	Pyrene	T
Raw Statistics					
Number of Valid Samples	5	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.912367	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.762		
Minimum	46.9	Data are normal at 5% significance level			
Maximum	76.4				
Mean	64.3	95% UCL (Assuming Normal Distribution)			
Median	69.2	Student's-t UCL	76.08354		
Standard Deviation	12.35961				
Variance	152.76	Gamma Distribution Test			
Coefficient of Variation	0.192218	A-D Test Statistic	0.374969		
Skewness	-0.727409	A-D 5% Critical Value	0.678527		
Gamma Statistics					
k hat	31.35176	K-S Test Statistic	0.282792		
k star (bias corrected)	12.67404	K-S 5% Critical Value	0.357046		
Theta hat	2.050922	Data follow gamma distribution			
Theta star	5.073364	at 5% significance level			
nu hat	313.5176	95% UCLs (Assuming Gamma Distribution)			
nu star	126.7404	Approximate Gamma UCL	80.10589		
Approx.Chi Square Value (.05)	101.7329	Adjusted Gamma UCL	88.63964		
Adjusted Level of Significance	0.0086	Lognormal Distribution Test			
Adjusted Chi Square Value	91.9386	Shapiro-Wilk Test Statistic	0.895939		
Log-transformed Statistics					
Minimum of log data	3.848018	Shapiro-Wilk 5% Critical Value	0.762		
Maximum of log data	4.335983	Data are lognormal at 5% significance level			
Mean of log data	4.147527	95% UCLs (Assuming Lognormal Distribution)			
Standard Deviation of log data	0.204297	95% H-UCL	80.94148		
Variance of log data	0.041737	95% Chebyshev (MVUE) UCL	89.92647		
		97.5% Chebyshev (MVUE) UCL	100.9979		
		99% Chebyshev (MVUE) UCL	122.7457		
95% Non-parametric UCLs					
		CLT UCL	73.39174		
		Adj-CLT UCL (Adjusted for skewness)	71.47045		
		Mod-t UCL (Adjusted for skewness)	75.78385		
		Jackknife UCL	76.08354		
		Standard Bootstrap UCL	72.53095		
		Bootstrap-t UCL	75.07372		
RECOMMENDATION					
Data are normal (0.05)		Hall's Bootstrap UCL	69.87367		
		Percentile Bootstrap UCL	72.08		
		BCA Bootstrap UCL	70.92		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	88.39332		
		97.5% Chebyshev (Mean, Sd) UCL	98.81852		
		99% Chebyshev (Mean, Sd) UCL	119.2968		

Table 17
Summary Statistics
Hudson Bog Surface Water

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean 3 SD	+ Recommended UL
Metals, Total (ug/L)																
Aluminum	10 / 10	100%		178 - 319	266	42.0	0.158	-0.88	Normal	290	Student's-t UCL	343	388	319	392	319
Barium	10 / 10	100%		15.3 - 26.4	19.1	3.14	0.164	1.29	Normal	21.0	Student's-t UCL	24.9	28.3	26.4	28.6	24.9
Beryllium	10 / 10	100%		0.023 - 0.048	0.0363	0.00766	0.211	-0.26	Normal	0.041	Student's-t UCL	0.0503	0.0590	0.0480	0.0593	0.0480
Cadmium	10 / 10	100%		0.091 - 0.15	0.112	0.0153	0.137	1.68	Non-parametric	0.121	Mod-t UCL (Adjusted for skewness)	0.15	*	0.15	0.15	0.15
Calcium	10 / 10	100%		2490 - 3460	3067	311	0.101	-0.66	Normal	3247	Student's-t UCL	3638	3973	3460	4001	3460
Chromium	10 / 10	100%		1.1 - 3.3	2.04	0.628	0.308	0.72	Normal	2.40	Student's-t UCL	3.19	3.87	3.3	3.92	3.19
Cobalt	10 / 10	100%		0.48 - 1.3	0.857	0.248	0.289	0.06	Normal	1.000	Student's-t UCL	1.31	1.58	1.30	1.60	1.30
Copper	10 / 10	100%		1.2 - 3.2	2.21	0.578	0.262	0.14	Normal	2.55	Student's-t UCL	3.27	3.89	3.20	3.94	3.20
Iron	10 / 10	100%		245 - 837	573	194	0.339	-0.54	Normal	685	Student's-t UCL	929	1138	837	1155	837
Lead	10 / 10	100%		1 - 5	2.06	1.30	0.631	1.75	Lognormal	3.02	95% H-UCL			5		
Log-transformed					0.586	0.515			Lognormal			4.62	8.04	5.00	2.13	2.13
Magnesium	10 / 10	100%		765 - 947	860	66.4	0.077	0.01	Normal	898	Student's-t UCL	981	1053	947	1059	947
Manganese	10 / 10	100%		100 - 237	135	43.6	0.323	1.69	G/NP	162	Approximate Gamma UCL			237		
Log-transformed					5	0.282			Lognormal			217	295	237	302	217
Nickel	10 / 10	100%		1.2 - 2.2	1.68	0.278	0.166	0.10	Normal	1.84	Student's-t UCL	2.19	2.49	2.20	2.51	2.19
Potassium	10 / 10	100%		1670 - 2000	1835	101	0.055	-0.17	Normal	1893	Student's-t UCL	2020	2128	2000	2137	2000
Silver	1 / 10	10%	0.008 : 0.033	0.026 - 0.026	0.0103	0.00655	0.639	1.80	Poisson			0.0400	0.0260			0.0260
Sodium	10 / 10	100%		16400 - 22600	19700	1599	0.081	-0.37	Normal	20627	Student's-t UCL	22630	24353	22600	24496	22600
Thallium	4 / 10	40%	0.023 : 0.05	0.055 - 0.35	0.0692	0.10	1.491	2.72	Non-parametric	0.152	95% Chebyshev (MVUE) UCL [a]	0.35	*	0.35	0.35	
Titanium	10 / 10	100%		3.8 - 7.9	5.66	1.29	0.228	0.37	Normal	6.41	Student's-t UCL	8.02	9.42	7.90	9.54	7.90
Tungsten	1 / 10	10%	0.15 : 0.4	0.87 - 0.87	0.198	0.240	1.213	3.01	Poisson			0.550	0.870			0.55
Uranium	2 / 10	20%	0.015 : 0.033	0.036 - 0.039	0.0182	0.0106	0.581	1.47	Non-parametric	0.027	95% H-UCL [a]	0.0390	*	0.0390		0.0390
Zinc	10 / 10	100%		22.5 - 45.5	34.4	5.99	0.174	-0.13	Normal	37.9	Student's-t UCL	45.4	51.9	45.5	52.4	45.4
Zirconium	2 / 10	20%	0.5 : 0.5	1.1 - 1.1	0.42	0.358	0.853	1.78	Non-parametric	0.914	95% Chebyshev (Mean, Sd) UCL	1.10	*	1.10		1.10
Hardness as CaCO3 (mg/L)	10 / 10	100%		9.37 - 12.5	11.2	1.03			Normal			13.1	14.2	12.5	14.3	12.5
Metals, Dissolved (ug/L)																
Aluminum	10 / 10	100%		143 - 257	204	40.7	0.199	-0.10	Normal	228	Student's-t UCL	279	323	257	326	257
Barium	10 / 10	100%		11.8 - 15.9	13.7	1.39	0.102	0.36	Normal	14.51	Student's-t UCL	16.2	17.8	15.9	18	15.9
Beryllium	7 / 10	70%	0.02 : 0.041	0.024 - 0.081	0.0439	0.0257	0.587	0.17	Normal	0.0588	Student's-t UCL	0.0910	0.1190	0.0810	0.121	0.0810
Cadmium	10 / 10	100%		0.072 - 0.13	0.0897	0.0183	0.204	1.36	Normal	0.100	Student's-t UCL	0.123	0.143	0.130	0.145	0.123
Calcium	10 / 10	100%		2270 - 3150	2782	301	0.108	-0.28	Normal	2956	Student's-t UCL	3333	3657	3150	3684	3150
Chromium	10 / 10	100%		1 - 2.3	1.56	0.331	0.212	0.81	Normal	1.75	Student's-t UCL	2.16	2.52	2.30	2.55	2.16
Cobalt	10 / 10	100%		0.42 - 1.5	0.801	0.307	0.384	1.195	Normal	0.979	Student's-t UCL	1.37	1.70	1.50	1.72	1.37
Copper	10 / 10	100%		1.5 - 2.2	1.96	0.232	0.118	-0.93	Normal	2.09	Student's-t UCL	2.38	2.64	2.20	2.66	2.20
Iron	10 / 10	100%		157 - 697	465	175	0.375	-0.39	Normal	566	Student's-t UCL	785	973	697	989	697
Lead	10 / 10	100%		1.2 - 2.3	1.66	0.347	0.209	0.62	Normal	1.86	Student's-t UCL	2.30	2.67	2.30	2.70	2.30
Magnesium	10 / 10	100%		647 - 830	753	62.5	0.083	-0.46	Normal	789	Student's-t UCL	867	935	830	940	830
Manganese	10 / 10	100%		92.2 - 202	124	34.5	0.279	1.528	G/NP	145	Approximate Gamma UCL			202		
Log-transformed					5	0.25			Lognormal			190	249	202	254	190
Mercury	4 / 10	40%	0.033 : 0.033	0.035 - 0.048	0.0267	0.014	0.508	0.686	Non-parametric	0.0347	Mod-t UCL (Adjusted for skewness)	0.048	*	0.048		0.048
Nickel	10 / 10	100%		2 - 3.1	2.29	0.328	0.143	1.88	G/NP	2.48	Approximate Gamma UCL			3.10		
Log-transformed					0.82	0.132			Lognormal			2.89	3.33	3.10	3.37	2.89
Potassium	10 / 10	100%		1650 - 1920	1814	84.2	0.046	-0.55	Normal	1863	Student's-t UCL	1968	2059	1920	2067	1920
Sodium	10 / 10	100%		17500 - 24600	20900	2035	0.097	-0.02	Normal	22080	Student's-t UCL	24630	26824	24600	27006	24600
Thallium	1 / 10	10%	0.047 : 0.15	0.39 - 0.39	0.0743	0.112	1.51	3.07	Poisson			0.14	0.39			0.14
Titanium	10 / 10	100%		2.4 - 3.5	3.05	0.354	0.116	-0.42	Normal	3.25	Student's-t UCL	3.70	4.08	3.50	4.11	3.50
Uranium	10 / 10	100%		0.008 - 0.026	0.0171</td											

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SM 2340 B	Hardness as CaC ₆
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.939877
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	9.37	Data are normal at 5% significance level	
Maximum	12.5		
Mean	11.203	95% UCL (Assuming Normal Distribution)	
Median	11.3	Student's-t UCL	11.79845
Standard Deviation	1.027208		
Variance	1.055157	Gamma Distribution Test	
Coefficient of Variation	0.09169	A-D Test Statistic	0.349511
Skewness	-0.539937	A-D 5% Critical Value	0.72385
		K-S Test Statistic	0.199802
		K-S 5% Critical Value	0.2658
Gamma Statistics			
k hat	127.8877	Data follow gamma distribution	
k star (bias corrected)	89.58804	at 5% significance level	
Theta hat	0.0876		
Theta star	0.12505	95% UCLs (Assuming Gamma Distribution)	
nu hat	2557.754	Approximate Gamma UCL	11.84655
nu star	1791.761	Adjusted Gamma UCL	11.96298
Approx.Chi Square Value (.05)	1694.425		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	1677.934	Shapiro-Wilk Test Statistic	0.930499
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	2.237513		
Maximum of log data	2.525729	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.412267	95% H-UCL	N/A
Standard Deviation of log data	0.094094	95% Chebyshev (MVUE) UCL	12.65794
Variance of log data	0.008854	97.5% Chebyshev (MVUE) UCL	13.28716
		99% Chebyshev (MVUE) UCL	14.52315
		95% Non-parametric UCLs	
		CLT UCL	11.7373
		Adj-CLT UCL (Adjusted for skewness)	11.67804
		Mod-t UCL (Adjusted for skewness)	11.78921
		Jackknife UCL	11.79845
		Standard Bootstrap UCL	11.71708
		Bootstrap-t UCL	11.74954
RECOMMENDATION		Hall's Bootstrap UCL	11.64558
Data are normal (0.05)		Percentile Bootstrap UCL	11.68
		BCA Bootstrap UCL	11.682
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	12.61891
		97.5% Chebyshev (Mean, Sd) UCL	13.23157
		99% Chebyshev (Mean, Sd) UCL	14.43504

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Aluminum
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.945838
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	143	Data are normal at 5% significance level	
Maximum	257		
Mean	204.2	95% UCL (Assuming Normal Distribution)	
Median	203.5	Student's-t UCL	227.7987
Standard Deviation	40.70981		
Variance	1657.289	Gamma Distribution Test	
Coefficient of Variation	0.199362	A-D Test Statistic	0.247336
Skewness	-0.104299	A-D 5% Critical Value	0.724513
		K-S Test Statistic	0.133295
		K-S 5% Critical Value	0.266098
Gamma Statistics			
k hat	26.9225	Data follow gamma distribution	
k star (bias corrected)	18.91242	at 5% significance level	
Theta hat	7.584734		
Theta star	10.79714	95% UCLs (Assuming Gamma Distribution)	
nu hat	538.45	Approximate Gamma UCL	231.1392
nu star	378.2483	Adjusted Gamma UCL	236.2362
Approx.Chi Square Value (.05)	334.1637		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	326.9537	Shapiro-Wilk Test Statistic	0.941865
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.962845		
Maximum of log data	5.549076	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.300413	95% H-UCL	233.0683
Standard Deviation of log data	0.206196	95% Chebyshev (MVUE) UCL	262.5438
Variance of log data	0.042517	97.5% Chebyshev (MVUE) UCL	287.7527
		99% Chebyshev (MVUE) UCL	337.2708
		95% Non-parametric UCLs	
		CLT UCL	225.3751
		Adj-CLT UCL (Adjusted for skewness)	224.9215
		Mod-t UCL (Adjusted for skewness)	227.7279
		Jackknife UCL	227.7987
		Standard Bootstrap UCL	224.1547
		Bootstrap-t UCL	228.0062
RECOMMENDATION		Hall's Bootstrap UCL	223.846
Data are normal (0.05)		Percentile Bootstrap UCL	223.4
		BCA Bootstrap UCL	224
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	260.3146
		97.5% Chebyshev (Mean, Sd) UCL	284.5954
		99% Chebyshev (Mean, Sd) UCL	332.2904

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Aluminum
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.94539
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	178	Data are normal at 5% significance level	
Maximum	319		
Mean	265.9	95% UCL (Assuming Normal Distribution)	
Median	272	Student's-t UCL	290.2642
Standard Deviation	42.03028		
Variance	1766.544	Gamma Distribution Test	
Coefficient of Variation	0.158068	A-D Test Statistic	0.334929
Skewness	-0.882345	A-D 5% Critical Value	0.724443
		K-S Test Statistic	0.132645
		K-S 5% Critical Value	0.265963
Gamma Statistics			
k hat	40.00135	Data follow gamma distribution	
k star (bias corrected)	28.06761	at 5% significance level	
Theta hat	6.647276		
Theta star	9.473554	95% UCLs (Assuming Gamma Distribution)	
nu hat	800.0269	Approximate Gamma UCL	294.1806
nu star	561.3522	Adjusted Gamma UCL	299.4517
Approx.Chi Square Value (.05)	507.3874		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	498.4562	Shapiro-Wilk Test Statistic	0.902606
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	5.181784		
Maximum of log data	5.765191	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.570569	95% H-UCL	296.4468
Standard Deviation of log data	0.172035	95% Chebyshev (MVUE) UCL	329.3513
Variance of log data	0.029596	97.5% Chebyshev (MVUE) UCL	356.7204
		99% Chebyshev (MVUE) UCL	410.4816
		95% Non-parametric UCLs	
		CLT UCL	287.762
		Adj-CLT UCL (Adjusted for skewness)	283.7994
		Mod-t UCL (Adjusted for skewness)	289.6461
		Jackknife UCL	290.2642
		Standard Bootstrap UCL	286.1334
		Bootstrap-t UCL	286.3626
RECOMMENDATION		Hall's Bootstrap UCL	284.8199
Data are normal (0.05)		Percentile Bootstrap UCL	285.6
		BCA Bootstrap UCL	283.6
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	323.8347
		97.5% Chebyshev (Mean, Sd) UCL	348.9032
		99% Chebyshev (Mean, Sd) UCL	398.1452

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Barium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.931438	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	11.8	Data are normal at 5% significance level		
Maximum	15.9			
Mean	13.7	95% UCL (Assuming Normal Distribution)		
Median	13.65	Student's-t UCL	14.5074	
Standard Deviation	1.392839			
Variance	1.94	Gamma Distribution Test		
Coefficient of Variation	0.101667	A-D Test Statistic	0.30772	
Skewness	0.359904	A-D 5% Critical Value	0.72385	
		K-S Test Statistic	0.140009	
Gamma Statistics		K-S 5% Critical Value	0.2658	
k hat	108.7262	Data follow gamma distribution		
k star (bias corrected)	76.175	at 5% significance level		
Theta hat	0.126005			
Theta star	0.179849	95% UCLs (Assuming Gamma Distribution)		
nu hat	2174.524	Approximate Gamma UCL	14.55671	
nu star	1523.5	Adjusted Gamma UCL	14.7122	
Approx.Chi Square Value (.05)	1433.837			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	1418.683	Shapiro-Wilk Test Statistic	0.93931	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.4681			
Maximum of log data	2.766319	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.61279	95% H-UCL	14.56405	
Standard Deviation of log data	0.100964	95% Chebyshev (MVUE) UCL	15.60789	
Variance of log data	0.010194	97.5% Chebyshev (MVUE) UCL	16.43356	
		99% Chebyshev (MVUE) UCL	18.05542	
95% Non-parametric UCLs				
		CLT UCL	14.42448	
		Adj-CLT UCL (Adjusted for skewness)	14.47805	
		Mod-t UCL (Adjusted for skewness)	14.51576	
		Jackknife UCL	14.5074	
		Standard Bootstrap UCL	14.3826	
		Bootstrap-t UCL	14.62289	
RECOMMENDATION		Hall's Bootstrap UCL	14.70113	
Data are normal (0.05)		Percentile Bootstrap UCL	14.36	
		BCA Bootstrap UCL	14.45	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	15.6199	
		97.5% Chebyshev (Mean, Sd) UCL	16.45064	
		99% Chebyshev (Mean, Sd) UCL	18.08247	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Barium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.880609	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	15.3	Data are normal at 5% significance level		
Maximum	26.4			
Mean	19.13	95% UCL (Assuming Normal Distribution)		
Median	19.4	Student's-t UCL	20.95025	
Standard Deviation	3.140081			
Variance	9.860111	Gamma Distribution Test		
Coefficient of Variation	0.164144	A-D Test Statistic	0.4206	
Skewness	1.289323	A-D 5% Critical Value	0.724418	
		K-S Test Statistic	0.202454	
		K-S 5% Critical Value	0.265915	
Gamma Statistics				
k hat	44.68525	Data follow gamma distribution		
k star (bias corrected)	31.34634	at 5% significance level		
Theta hat	0.428105			
Theta star	0.610279	95% UCLs (Assuming Gamma Distribution)		
nu hat	893.705	Approximate Gamma UCL	21.04682	
nu star	626.9269	Adjusted Gamma UCL	21.40278	
Approx.Chi Square Value (.05)	569.83			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	560.353	Shapiro-Wilk Test Statistic	0.923053	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	2.727853			
Maximum of log data	3.273364	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	2.940027	95% H-UCL	21.06375	
Standard Deviation of log data	0.155339	95% Chebyshev (MVUE) UCL	23.22519	
Variance of log data	0.02413	97.5% Chebyshev (MVUE) UCL	25.00036	
		99% Chebyshev (MVUE) UCL	28.48733	
		95% Non-parametric UCLs		
		CLT UCL	20.76331	
		Adj-CLT UCL (Adjusted for skewness)	21.1959	
		Mod-t UCL (Adjusted for skewness)	21.01772	
		Jackknife UCL	20.95025	
		Standard Bootstrap UCL	20.65984	
		Bootstrap-t UCL	21.47304	
RECOMMENDATION		Hall's Bootstrap UCL	23.43274	
Data are normal (0.05)		Percentile Bootstrap UCL	20.76	
		BCA Bootstrap UCL	21.06	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	23.4583	
		97.5% Chebyshev (Mean, Sd) UCL	25.33116	
		99% Chebyshev (Mean, Sd) UCL	29.01004	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Beryllium
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.927317	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.01	Data are normal at 5% significance level		
Maximum	0.081			
Mean	0.04385	95% UCL (Assuming Normal Distribution)		
Median	0.045	Student's-t UCL	0.058767	
Standard Deviation	0.025734			
Variance	0.000662	Gamma Distribution Test		
Coefficient of Variation	0.586858	A-D Test Statistic	0.328586	
Skewness	0.170989	A-D 5% Critical Value	0.733295	
		K-S Test Statistic	0.187706	
		K-S 5% Critical Value	0.268896	
Gamma Statistics				
k hat	2.672	Data follow gamma distribution		
k star (bias corrected)	1.937067	at 5% significance level		
Theta hat	0.016411			
Theta star	0.022637	95% UCLs (Assuming Gamma Distribution)		
nu hat	53.44	Approximate Gamma UCL	0.066664	
nu star	38.74133	Adjusted Gamma UCL	0.071897	
Approx.Chi Square Value (.05)	25.48296			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	23.62848	Shapiro-Wilk Test Statistic	0.925089	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.60517			
Maximum of log data	-2.513306	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-3.325624	95% H-UCL	0.085072	
Standard Deviation of log data	0.713052	95% Chebyshev (MVUE) UCL	0.090612	
Variance of log data	0.508443	97.5% Chebyshev (MVUE) UCL	0.110353	
		99% Chebyshev (MVUE) UCL	0.149132	
		95% Non-parametric UCLs		
		CLT UCL	0.057235	
		Adj-CLT UCL (Adjusted for skewness)	0.057706	
		Mod-t UCL (Adjusted for skewness)	0.058841	
		Jackknife UCL	0.058767	
		Standard Bootstrap UCL	0.056567	
		Bootstrap-t UCL	0.058361	
		Hall's Bootstrap UCL	0.056354	
RECOMMENDATION		Percentile Bootstrap UCL	0.0553	
Data are normal (0.05)		BCA Bootstrap UCL	0.0572	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.079322	
		97.5% Chebyshev (Mean, Sd) UCL	0.09467	
		99% Chebyshev (Mean, Sd) UCL	0.124819	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Beryllium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.98549
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.023	Data are normal at 5% significance level	
Maximum	0.048		
Mean	0.0363	95% UCL (Assuming Normal Distribution)	
Median	0.037	Student's-t UCL	0.04074
Standard Deviation	0.00766		
Variance	5.87E-005	Gamma Distribution Test	
Coefficient of Variation	0.211023	A-D Test Statistic	0.188295
Skewness	-0.259114	A-D 5% Critical Value	0.724533
		K-S Test Statistic	0.147942
		K-S 5% Critical Value	0.266136
Gamma Statistics			
k hat	23.27679	Data follow gamma distribution	
k star (bias corrected)	16.36042	at 5% significance level	
Theta hat	0.001559		
Theta star	0.002219	95% UCLs (Assuming Gamma Distribution)	
nu hat	465.5358	Approximate Gamma UCL	0.041488
nu star	327.2084	Adjusted Gamma UCL	0.042476
Approx.Chi Square Value (.05)	286.2894		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	279.6308	Shapiro-Wilk Test Statistic	0.962807
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-3.772261		
Maximum of log data	-3.036554	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-3.337572	95% H-UCL	0.041988
Standard Deviation of log data	0.224058	95% Chebyshev (MVUE) UCL	0.047599
Variance of log data	0.050202	97.5% Chebyshev (MVUE) UCL	0.052474
		99% Chebyshev (MVUE) UCL	0.06205
		95% Non-parametric UCLs	
		CLT UCL	0.040284
		Adj-CLT UCL (Adjusted for skewness)	0.040072
		Mod-t UCL (Adjusted for skewness)	0.040707
		Jackknife UCL	0.04074
		Standard Bootstrap UCL	0.04009
		Bootstrap-t UCL	0.040539
RECOMMENDATION		Hall's Bootstrap UCL	0.040205
Data are normal (0.05)		Percentile Bootstrap UCL	0.04
		BCA Bootstrap UCL	0.04
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.046859
		97.5% Chebyshev (Mean, Sd) UCL	0.051428
		99% Chebyshev (Mean, Sd) UCL	0.060402

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Cadmium
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.865478	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.072	Data are normal at 5% significance level		
Maximum	0.13			
Mean	0.0897	95% UCL (Assuming Normal Distribution)		
Median	0.086	Student's-t UCL	0.100294	
Standard Deviation	0.018276			
Variance	0.000334	Gamma Distribution Test		
Coefficient of Variation	0.203745	A-D Test Statistic	0.452654	
Skewness	1.357695	A-D 5% Critical Value	0.724497	
		K-S Test Statistic	0.166456	
		K-S 5% Critical Value	0.266068	
Gamma Statistics				
k hat	29.86862	Data follow gamma distribution		
k star (bias corrected)	20.9747	at 5% significance level		
Theta hat	0.003003			
Theta star	0.004277	95% UCLs (Assuming Gamma Distribution)		
nu hat	597.3725	Approximate Gamma UCL	0.10088	
nu star	419.4941	Adjusted Gamma UCL	0.102986	
Approx. Chi Square Value (.05)	373.0046			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	365.3758	Shapiro-Wilk Test Statistic	0.906795	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-2.631089			
Maximum of log data	-2.040221	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.428118	95% H-UCL	0.101001	
Standard Deviation of log data	0.188688	95% Chebyshev (MVUE) UCL	0.113002	
Variance of log data	0.035603	97.5% Chebyshev (MVUE) UCL	0.123117	
		99% Chebyshev (MVUE) UCL	0.142987	
		95% Non-parametric UCLs		
		CLT UCL	0.099206	
		Adj-CLT UCL (Adjusted for skewness)	0.101858	
		Mod-t UCL (Adjusted for skewness)	0.100708	
		Jackknife UCL	0.100294	
		Standard Bootstrap UCL	0.098732	
		Bootstrap-t UCL	0.107703	
RECOMMENDATION		Hall's Bootstrap UCL	0.149569	
Data are normal (0.05)		Percentile Bootstrap UCL	0.0989	
		BCA Bootstrap UCL	0.102	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.114892	
		97.5% Chebyshev (Mean, Sd) UCL	0.125792	
		99% Chebyshev (Mean, Sd) UCL	0.147204	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Cadmium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.772622	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.091	Data not normal at 5% significance level		
Maximum	0.15			
Mean	0.1121	95% UCL (Assuming Normal Distribution)		
Median	0.11	Student's-t UCL	0.12099	
Standard Deviation	0.015337			
Variance	0.000235	Gamma Distribution Test		
Coefficient of Variation	0.136812	A-D Test Statistic	1.078309	
Skewness	1.682987	A-D 5% Critical Value	0.724226	
		K-S Test Statistic	0.34414	
		K-S 5% Critical Value	0.265842	
Gamma Statistics				
k hat	65.20742	Data do not follow gamma distribution		
k star (bias corrected)	45.71186	at 5% significance level		
Theta hat	0.001719			
Theta star	0.002452	95% UCLs (Assuming Gamma Distribution)		
nu hat	1304.148	Approximate Gamma UCL	0.121279	
nu star	914.2372	Adjusted Gamma UCL	0.122965	
Approx.Chi Square Value (.05)	845.0429			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	833.4574	Shapiro-Wilk Test Statistic	0.815239	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-2.396896			
Maximum of log data	-1.89712	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.196051	95% H-UCL	0.121229	
Standard Deviation of log data	0.12804	95% Chebyshev (MVUE) UCL	0.131869	
Variance of log data	0.016394	97.5% Chebyshev (MVUE) UCL	0.140439	
		99% Chebyshev (MVUE) UCL	0.157272	
		95% Non-parametric UCLs		
		CLT UCL	0.120077	
		Adj-CLT UCL (Adjusted for skewness)	0.122835	
		Mod-t UCL (Adjusted for skewness)	0.121421	
		Jackknife UCL	0.12099	
		Standard Bootstrap UCL	0.119806	
		Bootstrap-t UCL	0.125752	
		Hall's Bootstrap UCL	0.169245	
		Percentile Bootstrap UCL	0.1201	
		BCA Bootstrap UCL	0.122	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	0.13324	
Data are Non-parametric (0.05)		97.5% Chebyshev (Mean, Sd) UCL	0.142387	
Use Student's-t UCL or Modified-t UCL		99% Chebyshev (Mean, Sd) UCL	0.160355	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Calcium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.922439	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	2270	Data are normal at 5% significance level		
Maximum	3150			
Mean	2782	95% UCL (Assuming Normal Distribution)		
Median	2790	Student's-t UCL	2956.308	
Standard Deviation	300.6955			
Variance	90417.78	Gamma Distribution Test		
Coefficient of Variation	0.108086	A-D Test Statistic	0.408271	
Skewness	-0.279424	A-D 5% Critical Value	0.723927	
		K-S Test Statistic	0.169635	
		K-S 5% Critical Value	0.265809	
Gamma Statistics				
k hat	92.85667	Data follow gamma distribution		
k star (bias corrected)	65.06633	at 5% significance level		
Theta hat	29.96015			
Theta star	42.75637	95% UCLs (Assuming Gamma Distribution)		
nu hat	1857.133	Approximate Gamma UCL	2970.989	
nu star	1301.327	Adjusted Gamma UCL	3005.404	
Approx.Chi Square Value (.05)	1218.547			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	1204.594	Shapiro-Wilk Test Statistic	0.919485	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	7.727535			
Maximum of log data	8.055158	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.925531	95% H-UCL	2975.241	
Standard Deviation of log data	0.110222	95% Chebyshev (MVUE) UCL	3205.312	
Variance of log data	0.012149	97.5% Chebyshev (MVUE) UCL	3388.395	
		99% Chebyshev (MVUE) UCL	3748.027	
		95% Non-parametric UCLs		
		CLT UCL	2938.406	
		Adj-CLT UCL (Adjusted for skewness)	2929.428	
		Mod-t UCL (Adjusted for skewness)	2954.907	
		Jackknife UCL	2956.308	
		Standard Bootstrap UCL	2927.07	
		Bootstrap-t UCL	2945.257	
		Hall's Bootstrap UCL	2915.076	
		Percentile Bootstrap UCL	2926	
		BCA Bootstrap UCL	2921	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	3196.48	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	3375.826	
		99% Chebyshev (Mean, Sd) UCL	3728.116	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Calcium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.935752	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	2490	Data are normal at 5% significance level		
Maximum	3460			
Mean	3067	95% UCL (Assuming Normal Distribution)		
Median	3145	Student's-t UCL	3247.438	
Standard Deviation	311.2716			
Variance	96890	Gamma Distribution Test		
Coefficient of Variation	0.101491	A-D Test Statistic	0.381679	
Skewness	-0.662526	A-D 5% Critical Value	0.72385	
		K-S Test Statistic	0.234708	
		K-S 5% Critical Value	0.2658	
Gamma Statistics				
k hat	103.1864	Data follow gamma distribution		
k star (bias corrected)	72.29712	at 5% significance level		
Theta hat	29.72292			
Theta star	42.42216	95% UCLs (Assuming Gamma Distribution)		
nu hat	2063.727	Approximate Gamma UCL	3264.121	
nu star	1445.942	Adjusted Gamma UCL	3299.936	
Approx.Chi Square Value (.05)	1358.621			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	1343.876	Shapiro-Wilk Test Statistic	0.922734	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	7.820038			
Maximum of log data	8.149024	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	8.023602	95% H-UCL	3269.44	
Standard Deviation of log data	0.105089	95% Chebyshev (MVUE) UCL	3512.073	
Variance of log data	0.011044	97.5% Chebyshev (MVUE) UCL	3704.504	
		99% Chebyshev (MVUE) UCL	4082.5	
		95% Non-parametric UCLs		
		CLT UCL	3228.907	
		Adj-CLT UCL (Adjusted for skewness)	3206.872	
		Mod-t UCL (Adjusted for skewness)	3244.001	
		Jackknife UCL	3247.438	
		Standard Bootstrap UCL	3220.509	
		Bootstrap-t UCL	3232.534	
		Hall's Bootstrap UCL	3208.652	
		Percentile Bootstrap UCL	3214	
		BCA Bootstrap UCL	3208	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	3496.058	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	3681.712	
		99% Chebyshev (Mean, Sd) UCL	4046.393	

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Chromium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.884207	
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1	Data are normal at 5% significance level		
Maximum	2.3			
Mean	1.56	95% UCL (Assuming Normal Distribution)		
Median	1.6	Student's-t UCL	1.751675	
Standard Deviation	0.330656			
Variance	0.109333	Gamma Distribution Test		
Coefficient of Variation	0.211959	A-D Test Statistic	0.588678	
Skewness	0.809551	A-D 5% Critical Value	0.724522	
		K-S Test Statistic	0.223062	
		K-S 5% Critical Value	0.266115	
Gamma Statistics				
k hat	25.29058	Data follow gamma distribution		
k star (bias corrected)	17.77007	at 5% significance level		
Theta hat	0.061683			
Theta star	0.087788	95% UCLs (Assuming Gamma Distribution)		
nu hat	505.8117	Approximate Gamma UCL	1.772998	
nu star	355.4015	Adjusted Gamma UCL	1.813406	
Approx.Chi Square Value (.05)	312.7056			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	305.7376	Shapiro-Wilk Test Statistic	0.906227	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0			
Maximum of log data	0.832909	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.424785	95% H-UCL	1.786194	
Standard Deviation of log data	0.211067	95% Chebyshev (MVUE) UCL	2.015697	
Variance of log data	0.044549	97.5% Chebyshev (MVUE) UCL	2.212802	
		99% Chebyshev (MVUE) UCL	2.599979	
		95% Non-parametric UCLs		
		CLT UCL	1.73199	
		Adj-CLT UCL (Adjusted for skewness)	1.760592	
		Mod-t UCL (Adjusted for skewness)	1.756136	
		Jackknife UCL	1.751675	
		Standard Bootstrap UCL	1.723078	
		Bootstrap-t UCL	1.776594	
		Hall's Bootstrap UCL	1.925571	
		Percentile Bootstrap UCL	1.72	
		BCA Bootstrap UCL	1.73	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	2.015778	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	2.212993	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	2.600385	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Chromium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.945166
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1.1	Data are normal at 5% significance level	
Maximum	3.3		
Mean	2.04	95% UCL (Assuming Normal Distribution)	
Median	1.9	Student's-t UCL	2.40376
Standard Deviation	0.627517		
Variance	0.393778	Gamma Distribution Test	
Coefficient of Variation	0.307606	A-D Test Statistic	0.284732
Skewness	0.717247	A-D 5% Critical Value	0.724957
		K-S Test Statistic	0.196959
		K-S 5% Critical Value	0.266537
Gamma Statistics			
k hat	12.01763	Data follow gamma distribution	
k star (bias corrected)	8.479009	at 5% significance level	
Theta hat	0.169751		
Theta star	0.240594	95% UCLs (Assuming Gamma Distribution)	
nu hat	240.3526	Approximate Gamma UCL	2.462913
nu star	169.5802	Adjusted Gamma UCL	2.546389
Approx.Chi Square Value (.05)	140.4611		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	135.8565	Shapiro-Wilk Test Statistic	0.964972
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.09531		
Maximum of log data	1.193922	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.670768	95% H-UCL	2.514144
Standard Deviation of log data	0.307908	95% Chebyshev (MVUE) UCL	2.913129
Variance of log data	0.094807	97.5% Chebyshev (MVUE) UCL	3.290653
		99% Chebyshev (MVUE) UCL	4.032226
		95% Non-parametric UCLs	
		CLT UCL	2.366402
		Adj-CLT UCL (Adjusted for skewness)	2.414494
		Mod-t UCL (Adjusted for skewness)	2.411261
		Jackknife UCL	2.40376
		Standard Bootstrap UCL	2.354887
		Bootstrap-t UCL	2.469814
RECOMMENDATION		Hall's Bootstrap UCL	2.50318
Data are normal (0.05)		Percentile Bootstrap UCL	2.38
		BCA Bootstrap UCL	2.41
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.904973
		97.5% Chebyshev (Mean, Sd) UCL	3.279247
		99% Chebyshev (Mean, Sd) UCL	4.014437

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Cobalt
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.903374	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.42	Data are normal at 5% significance level		
Maximum	1.5			
Mean	0.801	95% UCL (Assuming Normal Distribution)		
Median	0.755	Student's-t UCL	0.979135	
Standard Deviation	0.307298			
Variance	0.094432	Gamma Distribution Test		
Coefficient of Variation	0.383643	A-D Test Statistic	0.286538	
Skewness	1.194775	A-D 5% Critical Value	0.726651	
		K-S Test Statistic	0.137935	
		K-S 5% Critical Value	0.26692	
Gamma Statistics				
k hat	8.187447	Data follow gamma distribution		
k star (bias corrected)	5.797879	at 5% significance level		
Theta hat	0.097833			
Theta star	0.138154	95% UCLs (Assuming Gamma Distribution)		
nu hat	163.7489	Approximate Gamma UCL	1.008587	
nu star	115.9576	Adjusted Gamma UCL	1.050704	
Approx.Chi Square Value (.05)	92.09128			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	88.39981	Shapiro-Wilk Test Statistic	0.956362	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-0.867501			
Maximum of log data	0.405465	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-0.284205	95% H-UCL	1.039872	
Standard Deviation of log data	0.371303	95% Chebyshev (MVUE) UCL	1.214503	
Variance of log data	0.137866	97.5% Chebyshev (MVUE) UCL	1.39364	
		99% Chebyshev (MVUE) UCL	1.74552	
		95% Non-parametric UCLs		
		CLT UCL	0.960841	
		Adj-CLT UCL (Adjusted for skewness)	1.000071	
		Mod-t UCL (Adjusted for skewness)	0.985254	
		Jackknife UCL	0.979135	
		Standard Bootstrap UCL	0.955859	
		Bootstrap-t UCL	1.040428	
		Hall's Bootstrap UCL	1.248704	
RECOMMENDATION		Percentile Bootstrap UCL	0.97	
Data are normal (0.05)		BCA Bootstrap UCL	1.004	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.224581	
		97.5% Chebyshev (Mean, Sd) UCL	1.407865	
		99% Chebyshev (Mean, Sd) UCL	1.767891	

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Cobalt
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	10		Shapiro-Wilk Test Statistic	0.963656
Number of Unique Samples	10		Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.48		Data are normal at 5% significance level	
Maximum	1.3			
Mean	0.857		95% UCL (Assuming Normal Distribution)	
Median	0.86		Student's-t UCL	1.000485
Standard Deviation	0.247523			
Variance	0.061268		Gamma Distribution Test	
Coefficient of Variation	0.288825		A-D Test Statistic	0.321311
Skewness	0.058998		A-D 5% Critical Value	0.724941
			K-S Test Statistic	0.159875
			K-S 5% Critical Value	0.266523
Gamma Statistics				
k hat	12.33684		Data follow gamma distribution	
k star (bias corrected)	8.702451		at 5% significance level	
Theta hat	0.069467			
Theta star	0.098478		95% UCLs (Assuming Gamma Distribution)	
nu hat	246.7367		Approximate Gamma UCL	1.032015
nu star	174.049		Adjusted Gamma UCL	1.066502
Approx.Chi Square Value (.05)	144.5328			
Adjusted Level of Significance	0.0267		Lognormal Distribution Test	
Adjusted Chi Square Value	139.8592		Shapiro-Wilk Test Statistic	0.930168
			Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics			Data are lognormal at 5% significance level	
Minimum of log data	-0.733969			
Maximum of log data	0.262364		95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.195394		95% H-UCL	1.060772
Standard Deviation of log data	0.310894		95% Chebyshev (MVUE) UCL	1.229776
Variance of log data	0.096655		97.5% Chebyshev (MVUE) UCL	1.390242
			99% Chebyshev (MVUE) UCL	1.705446
			95% Non-parametric UCLs	
			CLT UCL	0.985749
			Adj-CLT UCL (Adjusted for skewness)	0.987309
			Mod-t UCL (Adjusted for skewness)	1.000728
			Jackknife UCL	1.000485
			Standard Bootstrap UCL	0.978383
			Bootstrap-t UCL	1.002806
RECOMMENDATION			Hall's Bootstrap UCL	1.01246
Data are normal (0.05)			Percentile Bootstrap UCL	0.983
			BCA Bootstrap UCL	0.983
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	1.198187
			97.5% Chebyshev (Mean, Sd) UCL	1.345819
			99% Chebyshev (Mean, Sd) UCL	1.635814

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Copper
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.89722	
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1.5	Data are normal at 5% significance level		
Maximum	2.2			
Mean	1.96	95% UCL (Assuming Normal Distribution)		
Median	2.05	Student's-t UCL	2.094428	
Standard Deviation	0.2319			
Variance	0.053778	Gamma Distribution Test		
Coefficient of Variation	0.118317	A-D Test Statistic	0.520125	
Skewness	-0.927479	A-D 5% Critical Value	0.724132	
		K-S Test Statistic	0.238411	
		K-S 5% Critical Value	0.265831	
Gamma Statistics				
k hat	73.8725	Data follow gamma distribution		
k star (bias corrected)	51.77742	at 5% significance level		
Theta hat	0.026532			
Theta star	0.037854	95% UCLs (Assuming Gamma Distribution)		
nu hat	1477.45	Approximate Gamma UCL	2.11022	
nu star	1035.548	Adjusted Gamma UCL	2.137722	
Approx.Chi Square Value (.05)	961.8309			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	949.457	Shapiro-Wilk Test Statistic	0.878433	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics				
Minimum of log data	0.405465	Data are lognormal at 5% significance level		
Maximum of log data	0.788457			
Mean of log data	0.666161	95% H-UCL	2.116825	
Standard Deviation of log data	0.125136	95% Chebyshev (MVUE) UCL	2.299101	
Variance of log data	0.015659	97.5% Chebyshev (MVUE) UCL	2.445611	
		99% Chebyshev (MVUE) UCL	2.733402	
		95% Non-parametric UCLs		
		CLT UCL	2.080623	
		Adj-CLT UCL (Adjusted for skewness)	2.057641	
		Mod-t UCL (Adjusted for skewness)	2.090844	
		Jackknife UCL	2.094428	
		Standard Bootstrap UCL	2.075248	
		Bootstrap-t UCL	2.076747	
		Hall's Bootstrap UCL	2.056028	
		Percentile Bootstrap UCL	2.07	
		BCA Bootstrap UCL	2.06	
RECOMMENDATION				
Data are normal (0.05)				
		95% Chebyshev (Mean, Sd) UCL	2.279653	
		97.5% Chebyshev (Mean, Sd) UCL	2.417967	
		99% Chebyshev (Mean, Sd) UCL	2.689657	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Copper
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.974776
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1.2	Data are normal at 5% significance level	
Maximum	3.2		
Mean	2.21	95% UCL (Assuming Normal Distribution)	
Median	2.15	Student's-t UCL	2.545181
Standard Deviation	0.578216		
Variance	0.334333	Gamma Distribution Test	
Coefficient of Variation	0.261636	A-D Test Statistic	0.220592
Skewness	0.142771	A-D 5% Critical Value	0.724788
		K-S Test Statistic	0.144912
		K-S 5% Critical Value	0.266384
Gamma Statistics			
k hat	15.34243	Data follow gamma distribution	
k star (bias corrected)	10.80637	at 5% significance level	
Theta hat	0.144045		
Theta star	0.204509	95% UCLs (Assuming Gamma Distribution)	
nu hat	306.8486	Approximate Gamma UCL	2.608677
nu star	216.1274	Adjusted Gamma UCL	2.686215
Approx.Chi Square Value (.05)	183.0972		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	177.8121	Shapiro-Wilk Test Statistic	0.9543
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.182322		
Maximum of log data	1.163151	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.760049	95% H-UCL	2.661631
Standard Deviation of log data	0.277157	95% Chebyshev (MVUE) UCL	3.06403
Variance of log data	0.076816	97.5% Chebyshev (MVUE) UCL	3.432118
		99% Chebyshev (MVUE) UCL	4.155157
		95% Non-parametric UCLs	
		CLT UCL	2.510758
		Adj-CLT UCL (Adjusted for skewness)	2.519579
		Mod-t UCL (Adjusted for skewness)	2.546557
		Jackknife UCL	2.545181
		Standard Bootstrap UCL	2.497213
		Bootstrap-t UCL	2.548768
		Hall's Bootstrap UCL	2.559243
		Percentile Bootstrap UCL	2.5
		BCA Bootstrap UCL	2.51
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	3.007015
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	3.351884
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	4.029313

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Iron	D
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.95144	
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	157	Data are normal at 5% significance level		
Maximum	697			
Mean	465.1	95% UCL (Assuming Normal Distribution)		
Median	460.5	Student's-t UCL	566.2814	
Standard Deviation	174.5467			
Variance	30466.54	Gamma Distribution Test		
Coefficient of Variation	0.375289	A-D Test Statistic	0.389217	
Skewness	-0.392689	A-D 5% Critical Value	0.72836	
		K-S Test Statistic	0.171992	
		K-S 5% Critical Value	0.267231	
Gamma Statistics				
k hat	6.241981	Data follow gamma distribution		
k star (bias corrected)	4.436054	at 5% significance level		
Theta hat	74.5116			
Theta star	104.8454	95% UCLs (Assuming Gamma Distribution)		
nu hat	124.8396	Approximate Gamma UCL	606.8181	
nu star	88.72107	Adjusted Gamma UCL	636.2466	
Approx.Chi Square Value (.05)	68.00089			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	64.85563	Shapiro-Wilk Test Statistic	0.887344	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	5.056246			
Maximum of log data	6.546785	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.060016	95% H-UCL	664.9302	
Standard Deviation of log data	0.461334	95% Chebyshev (MVUE) UCL	775.2562	
Variance of log data	0.212829	97.5% Chebyshev (MVUE) UCL	906.885	
		99% Chebyshev (MVUE) UCL	1165.444	
		95% Non-parametric UCLs		
		CLT UCL	555.8902	
		Adj-CLT UCL (Adjusted for skewness)	548.5663	
		Mod-t UCL (Adjusted for skewness)	565.139	
		Jackknife UCL	566.2814	
		Standard Bootstrap UCL	549.4958	
		Bootstrap-t UCL	559.7431	
RECOMMENDATION		Hall's Bootstrap UCL	546.1316	
Data are normal (0.05)		Percentile Bootstrap UCL	545	
		BCA Bootstrap UCL	543.5	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	705.696	
		97.5% Chebyshev (Mean, Sd) UCL	809.8021	
		99% Chebyshev (Mean, Sd) UCL	1014.298	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Iron	T
Raw Statistics			Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.936815		
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842		
Minimum	245	Data are normal at 5% significance level			
Maximum	837				
Mean	572.8	95% UCL (Assuming Normal Distribution)			
Median	568	Student's-t UCL	685.3298		
Standard Deviation	194.1236				
Variance	37683.96	Gamma Distribution Test			
Coefficient of Variation	0.338903	A-D Test Statistic	0.517716		
Skewness	-0.539062	A-D 5% Critical Value	0.727015		
		K-S Test Statistic	0.207696		
		K-S 5% Critical Value	0.266986		
Gamma Statistics					
k hat	7.773416	Data follow gamma distribution			
k star (bias corrected)	5.508058	at 5% significance level			
Theta hat	73.68703				
Theta star	103.9931	95% UCLs (Assuming Gamma Distribution)			
nu hat	155.4683	Approximate Gamma UCL	725.8719		
nu star	110.1612	Adjusted Gamma UCL	757.0589		
Approx.Chi Square Value (.05)	86.93037				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	83.34928	Shapiro-Wilk Test Statistic	0.86416		
		Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics		Data are lognormal at 5% significance level			
Minimum of log data	5.501258				
Maximum of log data	6.729824	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	6.284838	95% H-UCL	775.4511		
Standard Deviation of log data	0.407954	95% Chebyshev (MVUE) UCL	906.7599		
Variance of log data	0.166426	97.5% Chebyshev (MVUE) UCL	1049.101		
		99% Chebyshev (MVUE) UCL	1328.703		
		95% Non-parametric UCLs			
		CLT UCL	673.7731		
		Adj-CLT UCL (Adjusted for skewness)	662.5916		
		Mod-t UCL (Adjusted for skewness)	683.5857		
		Jackknife UCL	685.3298		
		Standard Bootstrap UCL	672.1549		
		Bootstrap-t UCL	678.6857		
RECOMMENDATION		Hall's Bootstrap UCL	663.4525		
Data are normal (0.05)		Percentile Bootstrap UCL	666.9		
		BCA Bootstrap UCL	660		
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	840.3809		
		97.5% Chebyshev (Mean, Sd) UCL	956.1633		
		99% Chebyshev (Mean, Sd) UCL	1183.596		

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Lead	D
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.95401	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1.2	Data are normal at 5% significance level		
Maximum	2.3			
Mean	1.66	95% UCL (Assuming Normal Distribution)		
Median	1.6	Student's-t UCL	1.861179	
Standard Deviation	0.347051			
Variance	0.120444	Gamma Distribution Test		
Coefficient of Variation	0.209067	A-D Test Statistic	0.198126	
Skewness	0.620409	A-D 5% Critical Value	0.724516	
		K-S Test Statistic	0.148755	
Gamma Statistics		K-S 5% Critical Value	0.266105	
k hat	26.32637	Data follow gamma distribution		
k star (bias corrected)	18.49513	at 5% significance level		
Theta hat	0.063055			
Theta star	0.089753	95% UCLs (Assuming Gamma Distribution)		
nu hat	526.5275	Approximate Gamma UCL	1.881705	
nu star	369.9026	Adjusted Gamma UCL	1.923692	
Approx.Chi Square Value (.05)	326.3202			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	319.1978	Shapiro-Wilk Test Statistic	0.975429	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0.182322			
Maximum of log data	0.832909	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.487705	95% H-UCL	1.891803	
Standard Deviation of log data	0.204975	95% Chebyshev (MVUE) UCL	2.130082	
Variance of log data	0.042015	97.5% Chebyshev (MVUE) UCL	2.333658	
		99% Chebyshev (MVUE) UCL	2.733543	
95% Non-parametric UCLs				
		CLT UCL	1.840518	
		Adj-CLT UCL (Adjusted for skewness)	1.863525	
		Mod-t UCL (Adjusted for skewness)	1.864768	
		Jackknife UCL	1.861179	
		Standard Bootstrap UCL	1.831394	
		Bootstrap-t UCL	1.894643	
		Hall's Bootstrap UCL	1.936341	
		Percentile Bootstrap UCL	1.84	
		BCA Bootstrap UCL	1.85	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	2.138377	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	2.345371	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	2.751971	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Lead	T
Raw Statistics					
Number of Valid Samples	10	Normal Distribution Test			
Number of Unique Samples	7	Shapiro-Wilk Test Statistic	0.736856		
Minimum	1	Shapiro-Wilk 5% Critical Value	0.842		
Maximum	5	Data not normal at 5% significance level			
Mean	2.06	95% UCL (Assuming Normal Distribution)			
Median	1.75	Student's-t UCL	2.812941		
Standard Deviation	1.298888				
Variance	1.687111	Gamma Distribution Test			
Coefficient of Variation	0.630528	A-D Test Statistic	0.880533		
Skewness	1.754276	A-D 5% Critical Value	0.729862		
		K-S Test Statistic	0.333957		
		K-S 5% Critical Value	0.267927		
Gamma Statistics					
k hat	3.830789	Data do not follow gamma distribution			
k star (bias corrected)	2.748219	at 5% significance level			
Theta hat	0.537748				
Theta star	0.749576	95% UCLs (Assuming Gamma Distribution)			
nu hat	76.61577	Approximate Gamma UCL	2.908835		
nu star	54.96437	Adjusted Gamma UCL	3.09441		
Approx.Chi Square Value (.05)	38.92508				
Adjusted Level of Significance	0.0267	Lognormal Distribution Test			
Adjusted Chi Square Value	36.59069	Shapiro-Wilk Test Statistic	0.859513		
		Shapiro-Wilk 5% Critical Value	0.842		
Log-transformed Statistics					
Minimum of log data	0	Data are lognormal at 5% significance level			
Maximum of log data	1.609438	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	0.586543	95% H-UCL	3.015125		
Standard Deviation of log data	0.514841	95% Chebyshev (MVUE) UCL	3.485606		
Variance of log data	0.265061	97.5% Chebyshev (MVUE) UCL	4.118497		
		99% Chebyshev (MVUE) UCL	5.36169		
95% Non-parametric UCLs					
		CLT UCL	2.735615		
		Adj-CLT UCL (Adjusted for skewness)	2.979087		
		Mod-t UCL (Adjusted for skewness)	2.850918		
		Jackknife UCL	2.812941		
		Standard Bootstrap UCL	2.695767		
		Bootstrap-t UCL	4.393965		
		Hall's Bootstrap UCL	7.271376		
		Percentile Bootstrap UCL	2.76		
		BCA Bootstrap UCL	2.97		
RECOMMENDATION					
Data are lognormal (0.05)					
Use H-UCL					
		95% Chebyshev (Mean, Sd) UCL	3.850394		
		97.5% Chebyshev (Mean, Sd) UCL	4.625099		
		99% Chebyshev (Mean, Sd) UCL	6.146857		

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Magnesium
Raw Statistics			
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.931948
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	647	Data are normal at 5% significance level	
Maximum	830		
Mean	752.8	95% UCL (Assuming Normal Distribution)	
Median	766.5	Student's-t UCL	789.0442
Standard Deviation	62.52431		
Variance	3909.289	Gamma Distribution Test	
Coefficient of Variation	0.083056	A-D Test Statistic	0.36977
Skewness	-0.464132	A-D 5% Critical Value	0.72385
Gamma Statistics			
k hat	157.0224	Data follow gamma distribution	
k star (bias corrected)	109.9824	at 5% significance level	
Theta hat	4.794219		
Theta star	6.844733	95% UCLs (Assuming Gamma Distribution)	
nu hat	3140.449	Approximate Gamma UCL	791.6597
nu star	2199.648	Adjusted Gamma UCL	798.6646
Approx.Chi Square Value (.05)	2091.675		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	2073.329	Shapiro-Wilk Test Statistic	0.925006
Log-transformed Statistics			
Minimum of log data	6.472346	Shapiro-Wilk 5% Critical Value	0.842
Maximum of log data	6.721426	Data are lognormal at 5% significance level	
Mean of log data	6.620612		
Standard Deviation of log data	0.084737	95% UCLs (Assuming Lognormal Distribution)	
Variance of log data	0.00718	95% H-UCL	N/A
		95% Chebyshev (MVUE) UCL	840.8153
		97.5% Chebyshev (MVUE) UCL	878.8857
		99% Chebyshev (MVUE) UCL	953.6676
95% Non-parametric UCLs			
		CLT UCL	785.3219
		Adj-CLT UCL (Adjusted for skewness)	782.2211
		Mod-t UCL (Adjusted for skewness)	788.5605
		Jackknife UCL	789.0442
		Standard Bootstrap UCL	783.4311
		Bootstrap-t UCL	787.3018
RECOMMENDATION			
Data are normal (0.05)		Hall's Bootstrap UCL	781.0405
		Percentile Bootstrap UCL	782.6
		BCA Bootstrap UCL	780.5
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	838.9838
		97.5% Chebyshev (Mean, Sd) UCL	876.2756
		99% Chebyshev (Mean, Sd) UCL	949.5281

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Magnesium
Raw Statistics				
Number of Valid Samples	10	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.929756
Number of Unique Samples	10		Shapiro-Wilk 5% Critical Value	0.842
Minimum	765		Data are normal at 5% significance level	
Maximum	947			
Mean	859.6	95% UCL (Assuming Normal Distribution)		
Median	858.5	Student's-t UCL		898.113
Standard Deviation	66.43828			
Variance	4414.044	Gamma Distribution Test		
Coefficient of Variation	0.07729	A-D Test Statistic		0.307008
Skewness	0.010289	A-D 5% Critical Value		0.72385
Gamma Statistics		K-S Test Statistic		0.185014
k hat	185.4136	K-S 5% Critical Value		0.2658
k star (bias corrected)	129.8562	Data follow gamma distribution		
Theta hat	4.636122	at 5% significance level		
Theta star	6.619632	95% UCLs (Assuming Gamma Distribution)		
nu hat	3708.271	Approximate Gamma UCL		900.3055
nu star	2597.123	Adjusted Gamma UCL		907.6234
Approx.Chi Square Value (.05)	2479.7			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	2459.706	Shapiro-Wilk Test Statistic		0.931911
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.842
Minimum of log data	6.639876	Data are lognormal at 5% significance level		
Maximum of log data	6.853299	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.753768	95% H-UCL		N/A
Standard Deviation of log data	0.077531	95% Chebyshev (MVUE) UCL		951.515
Variance of log data	0.006011	97.5% Chebyshev (MVUE) UCL		991.2847
		99% Chebyshev (MVUE) UCL		1069.405
95% Non-parametric UCLs				
		CLT UCL		894.1578
		Adj-CLT UCL (Adjusted for skewness)		894.2308
		Mod-t UCL (Adjusted for skewness)		898.1244
		Jackknife UCL		898.113
		Standard Bootstrap UCL		892.1666
		Bootstrap-t UCL		898.1145
RECOMMENDATION		Hall's Bootstrap UCL		890.2202
Data are normal (0.05)		Percentile Bootstrap UCL		894
		BCA Bootstrap UCL		895
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		951.1788
		97.5% Chebyshev (Mean, Sd) UCL		990.8051
		99% Chebyshev (Mean, Sd) UCL		1068.643

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Manganese
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.838028
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	92.2	Data not normal at 5% significance level	
Maximum	202		
Mean	123.84	95% UCL (Assuming Normal Distribution)	
Median	113.5	Student's-t UCL	143.8436
Standard Deviation	34.50794		
Variance	1190.798	Gamma Distribution Test	
Coefficient of Variation	0.278649	A-D Test Statistic	0.518603
Skewness	1.527999	A-D 5% Critical Value	0.724715
		K-S Test Statistic	0.192047
		K-S 5% Critical Value	0.266319
Gamma Statistics			
k hat	16.76056	Data follow gamma distribution	
k star (bias corrected)	11.79906	at 5% significance level	
Theta hat	7.388773		
Theta star	10.49575	95% UCLs (Assuming Gamma Distribution)	
nu hat	335.2113	Approximate Gamma UCL	145.0946
nu star	235.9812	Adjusted Gamma UCL	149.2081
Approx. Chi Square Value (.05)	201.4129		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	195.8601	Shapiro-Wilk Test Statistic	0.89776
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.52396		
Maximum of log data	5.308268	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.788862	95% H-UCL	145.547
Standard Deviation of log data	0.249809	95% Chebyshev (MVUE) UCL	166.3407
Variance of log data	0.062404	97.5% Chebyshev (MVUE) UCL	184.8442
		99% Chebyshev (MVUE) UCL	221.1906
		95% Non-parametric UCLs	
		CLT UCL	141.7893
		Adj-CLT UCL (Adjusted for skewness)	147.4233
		Mod-t UCL (Adjusted for skewness)	144.7224
		Jackknife UCL	143.8436
		Standard Bootstrap UCL	140.6077
		Bootstrap-t UCL	161.9376
RECOMMENDATION		Hall's Bootstrap UCL	235.6079
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	141.96
		BCA Bootstrap UCL	145.42
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	171.4059
		97.5% Chebyshev (Mean, Sd) UCL	191.9877
		99% Chebyshev (Mean, Sd) UCL	232.4167

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Manganese
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.795822
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	100	Data not normal at 5% significance level	
Maximum	237		
Mean	134.9	95% UCL (Assuming Normal Distribution)	
Median	119.5	Student's-t UCL	160.1566
Standard Deviation	43.56974		
Variance	1898.322	Gamma Distribution Test	
Coefficient of Variation	0.322978	A-D Test Statistic	0.671293
Skewness	1.691223	A-D 5% Critical Value	0.724909
		K-S Test Statistic	0.221034
		K-S 5% Critical Value	0.266494
Gamma Statistics			
k hat	12.96638	Data follow gamma distribution	
k star (bias corrected)	9.143135	at 5% significance level	
Theta hat	10.40383		
Theta star	14.75424	95% UCLs (Assuming Gamma Distribution)	
nu hat	259.3277	Approximate Gamma UCL	161.6759
nu star	182.8627	Adjusted Gamma UCL	166.9357
Approx. Chi Square Value (.05)	152.5779		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	147.7705	Shapiro-Wilk Test Statistic	0.859106
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.60517		
Maximum of log data	5.46806	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.865477	95% H-UCL	162.2769
Standard Deviation of log data	0.28197	95% Chebyshev (MVUE) UCL	187.0225
Variance of log data	0.079507	97.5% Chebyshev (MVUE) UCL	209.7737
		99% Chebyshev (MVUE) UCL	254.464
		95% Non-parametric UCLs	
		CLT UCL	157.5627
		Adj-CLT UCL (Adjusted for skewness)	165.4362
		Mod-t UCL (Adjusted for skewness)	161.3847
		Jackknife UCL	160.1566
		Standard Bootstrap UCL	156.5108
		Bootstrap-t UCL	184.5177
RECOMMENDATION		Hall's Bootstrap UCL	268.2766
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	158.4
		BCA Bootstrap UCL	164.8
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	194.9567
		97.5% Chebyshev (Mean, Sd) UCL	220.9433
		99% Chebyshev (Mean, Sd) UCL	271.989

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Nickel
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.80746	
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	2	Data not normal at 5% significance level		
Maximum	3.1			
Mean	2.29	95% UCL (Assuming Normal Distribution)		
Median	2.2	Student's-t UCL	2.480208	
Standard Deviation	0.328126			
Variance	0.107667	Gamma Distribution Test		
Coefficient of Variation	0.143286	A-D Test Statistic	0.610614	
Skewness	1.879517	A-D 5% Critical Value	0.724273	
Gamma Statistics		K-S Test Statistic	0.205597	
k hat	60.87256	K-S 5% Critical Value	0.265847	
k star (bias corrected)	42.67746	Data follow gamma distribution		
Theta hat	0.03762	at 5% significance level		
Theta star	0.053658	95% UCLs (Assuming Gamma Distribution)		
nu hat	1217.451	Approximate Gamma UCL	2.484494	
nu star	853.5492	Adjusted Gamma UCL	2.520282	
Approx. Chi Square Value (.05)	786.7306			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	775.5592	Shapiro-Wilk Test Statistic	0.853327	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.842	
Minimum of log data	0.693147	Data are lognormal at 5% significance level		
Maximum of log data	1.131402	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.820315	95% H-UCL	2.481914	
Standard Deviation of log data	0.131591	95% Chebyshev (MVUE) UCL	2.704741	
Variance of log data	0.017316	97.5% Chebyshev (MVUE) UCL	2.884645	
		99% Chebyshev (MVUE) UCL	3.238032	
95% Non-parametric UCLs				
		CLT UCL	2.460674	
		Adj-CLT UCL (Adjusted for skewness)	2.526571	
		Mod-t UCL (Adjusted for skewness)	2.490487	
		Jackknife UCL	2.480208	
		Standard Bootstrap UCL	2.451873	
		Bootstrap-t UCL	2.641305	
RECOMMENDATION		Hall's Bootstrap UCL	3.251179	
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	2.47	
		BCA Bootstrap UCL	2.5	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	2.74229	
		97.5% Chebyshev (Mean, Sd) UCL	2.937997	
		99% Chebyshev (Mean, Sd) UCL	3.322424	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Nickel
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.983037	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1.2	Data are normal at 5% significance level		
Maximum	2.2			
Mean	1.68	95% UCL (Assuming Normal Distribution)		
Median	1.7	Student's-t UCL	1.841203	
Standard Deviation	0.278089			
Variance	0.077333	Gamma Distribution Test		
Coefficient of Variation	0.165529	A-D Test Statistic	0.196628	
Skewness	0.102299	A-D 5% Critical Value	0.724445	
		K-S Test Statistic	0.150764	
		K-S 5% Critical Value	0.265967	
Gamma Statistics				
k hat	39.68093	Data follow gamma distribution		
k star (bias corrected)	27.84332	at 5% significance level		
Theta hat	0.042338			
Theta star	0.060338	95% UCLs (Assuming Gamma Distribution)		
nu hat	793.6186	Approximate Gamma UCL	1.859459	
nu star	556.8663	Adjusted Gamma UCL	1.892916	
Approx. Chi Square Value (.05)	503.1224			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	494.2296	Shapiro-Wilk Test Statistic	0.977022	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	0.182322			
Maximum of log data	0.788457	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	0.50614	95% H-UCL	1.868416	
Standard Deviation of log data	0.169227	95% Chebyshev (MVUE) UCL	2.073239	
Variance of log data	0.028638	97.5% Chebyshev (MVUE) UCL	2.243236	
		99% Chebyshev (MVUE) UCL	2.57716	
		95% Non-parametric UCLs		
		CLT UCL	1.824647	
		Adj-CLT UCL (Adjusted for skewness)	1.827687	
		Mod-t UCL (Adjusted for skewness)	1.841677	
		Jackknife UCL	1.841203	
		Standard Bootstrap UCL	1.816885	
		Bootstrap-t UCL	1.844886	
RECOMMENDATION		Hall's Bootstrap UCL	1.847937	
Data are normal (0.05)		Percentile Bootstrap UCL	1.82	
		BCA Bootstrap UCL	1.81	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.063319	
		97.5% Chebyshev (Mean, Sd) UCL	2.229181	
		99% Chebyshev (Mean, Sd) UCL	2.554986	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Potassium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.928001
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	1650	Data are normal at 5% significance level	
Maximum	1920		
Mean	1814	95% UCL (Assuming Normal Distribution)	
Median	1800	Student's-t UCL	1862.822
Standard Deviation	84.22193		
Variance	7093.333	Gamma Distribution Test	
Coefficient of Variation	0.046429	A-D Test Statistic	0.392498
Skewness	-0.545573	A-D 5% Critical Value	0.72385
		K-S Test Statistic	0.195219
Gamma Statistics		K-S 5% Critical Value	0.2658
k hat	507.5038	Data follow gamma distribution	
k star (bias corrected)	355.3193	at 5% significance level	
Theta hat	3.574358		
Theta star	5.105267	95% UCLs (Assuming Gamma Distribution)	
nu hat	10150.08	Approximate Gamma UCL	1865.179
nu star	7106.386	Adjusted Gamma UCL	1874.269
Approx. Chi Square Value (.05)	6911.393		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	6877.874	Shapiro-Wilk Test Statistic	0.92326
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	7.408531		
Maximum of log data	7.56008	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	7.502304	95% H-UCL	N/A
Standard Deviation of log data	0.04699	95% Chebyshev (MVUE) UCL	1931.532
Variance of log data	0.002208	97.5% Chebyshev (MVUE) UCL	1982.382
		99% Chebyshev (MVUE) UCL	2082.267
		95% Non-parametric UCLs	
		CLT UCL	1857.808
		Adj-CLT UCL (Adjusted for skewness)	1852.898
		Mod-t UCL (Adjusted for skewness)	1862.056
		Jackknife UCL	1862.822
		Standard Bootstrap UCL	1854.959
		Bootstrap-t UCL	1857.733
RECOMMENDATION		Hall's Bootstrap UCL	1855.03
Data are normal (0.05)		Percentile Bootstrap UCL	1853
		BCA Bootstrap UCL	1850
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1930.092
		97.5% Chebyshev (Mean, Sd) UCL	1980.325
		99% Chebyshev (Mean, Sd) UCL	2078.998

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Potassium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.965781	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	1670	Data are normal at 5% significance level		
Maximum	2000			
Mean	1835	95% UCL (Assuming Normal Distribution)		
Median	1860	Student's-t UCL	1893.433	
Standard Deviation	100.8023			
Variance	10161.11	Gamma Distribution Test		
Coefficient of Variation	0.054933	A-D Test Statistic	0.27458	
Skewness	-0.170854	A-D 5% Critical Value	0.72385	
		K-S Test Statistic	0.208994	
		K-S 5% Critical Value	0.2658	
Gamma Statistics				
k hat	365.4748	Data follow gamma distribution		
k star (bias corrected)	255.899	at 5% significance level		
Theta hat	5.020866			
Theta star	7.170797	95% UCLs (Assuming Gamma Distribution)		
nu hat	7309.496	Approximate Gamma UCL	1896.247	
nu star	5117.98	Adjusted Gamma UCL	1907.161	
Approx.Chi Square Value (.05)	4952.675			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	4924.333	Shapiro-Wilk Test Statistic	0.963021	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	7.420579			
Maximum of log data	7.600902	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.513431	95% H-UCL	N/A	
Standard Deviation of log data	0.055267	95% Chebyshev (MVUE) UCL	1974.836	
Variance of log data	0.003054	97.5% Chebyshev (MVUE) UCL	2035.339	
		99% Chebyshev (MVUE) UCL	2154.185	
		95% Non-parametric UCLs		
		CLT UCL	1887.432	
		Adj-CLT UCL (Adjusted for skewness)	1885.592	
		Mod-t UCL (Adjusted for skewness)	1893.146	
		Jackknife UCL	1893.433	
		Standard Bootstrap UCL	1883.971	
		Bootstrap-t UCL	1889.629	
RECOMMENDATION		Hall's Bootstrap UCL	1885.668	
Data are normal (0.05)		Percentile Bootstrap UCL	1885	
		BCA Bootstrap UCL	1883	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1973.946	
		97.5% Chebyshev (Mean, Sd) UCL	2034.069	
		99% Chebyshev (Mean, Sd) UCL	2152.167	

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Silver
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.813186
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.004	Data not normal at 5% significance level	
Maximum	0.026		
Mean	0.01025	95% UCL (Assuming Normal Distribution)	
Median	0.0085	Student's-t UCL	0.014047
Standard Deviation	0.00655		
Variance	4.29E-005	Gamma Distribution Test	
Coefficient of Variation	0.639026	A-D Test Statistic	0.358224
Skewness	1.804662	A-D 5% Critical Value	0.730673
		K-S Test Statistic	0.211622
		K-S 5% Critical Value	0.268111
Gamma Statistics			
k hat	3.540269	Data follow gamma distribution	
k star (bias corrected)	2.544855	at 5% significance level	
Theta hat	0.002895		
Theta star	0.004028	95% UCLs (Assuming Gamma Distribution)	
nu hat	70.80537	Approximate Gamma UCL	0.014691
nu star	50.89709	Adjusted Gamma UCL	0.015671
Approx.Chi Square Value (.05)	35.51101		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	33.28952	Shapiro-Wilk Test Statistic	0.966247
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-5.521461		
Maximum of log data	-3.649659	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-4.728307	95% H-UCL	0.015698
Standard Deviation of log data	0.551681	95% Chebyshev (MVUE) UCL	0.017983
Variance of log data	0.304352	97.5% Chebyshev (MVUE) UCL	0.021384
		99% Chebyshev (MVUE) UCL	0.028065
		95% Non-parametric UCLs	
		CLT UCL	0.013657
		Adj-CLT UCL (Adjusted for skewness)	0.014492
		Mod-t UCL (Adjusted for skewness)	0.014244
		Jackknife UCL	0.014047
		Standard Bootstrap UCL	0.013427
		Bootstrap-t UCL	0.018276
		Hall's Bootstrap UCL	0.032948
RECOMMENDATION			
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	0.01355
Use Approximate Gamma UCL		BCA Bootstrap UCL	0.0147
		95% Chebyshev (Mean, Sd) UCL	0.019279
		97.5% Chebyshev (Mean, Sd) UCL	0.023185
		99% Chebyshev (Mean, Sd) UCL	0.030859

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Sodium
Raw Statistics				
Number of Valid Samples	10	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.973177
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value		0.842
Minimum	17500	Data are normal at 5% significance level		
Maximum	24600			
Mean	20900	95% UCL (Assuming Normal Distribution)		
Median	20950	Student's-t UCL		22079.79
Standard Deviation	2035.245			
Variance	4142222	Gamma Distribution Test		
Coefficient of Variation	0.09738	A-D Test Statistic		0.233418
Skewness	-0.020462	A-D 5% Critical Value		0.72385
Gamma Statistics		K-S Test Statistic		0.14962
k hat	115.876	K-S 5% Critical Value		0.2658
k star (bias corrected)	81.17987	Data follow gamma distribution		
Theta hat	180.3652	at 5% significance level		
Theta star	257.453	95% UCLs (Assuming Gamma Distribution)		
nu hat	2317.52	Approximate Gamma UCL		22164.1
nu star	1623.597	Adjusted Gamma UCL		22393.23
Approx. Chi Square Value (.05)	1530.998			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	1515.332	Shapiro-Wilk Test Statistic		0.968205
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value		0.842
Minimum of log data	9.769956	Data are lognormal at 5% significance level		
Maximum of log data	10.1105	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	9.943183	95% H-UCL		N/A
Standard Deviation of log data	0.098381	95% Chebyshev (MVUE) UCL		23737.22
Variance of log data	0.009679	97.5% Chebyshev (MVUE) UCL		24964.59
		99% Chebyshev (MVUE) UCL		27375.53
95% Non-parametric UCLs				
		CLT UCL		21958.63
		Adj-CLT UCL (Adjusted for skewness)		21954.18
		Mod-t UCL (Adjusted for skewness)		22079.1
		Jackknife UCL		22079.79
		Standard Bootstrap UCL		21903.66
		Bootstrap-t UCL		22010.66
RECOMMENDATION		Hall's Bootstrap UCL		22099.21
Data are normal (0.05)		Percentile Bootstrap UCL		21910
		BCA Bootstrap UCL		21920
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL		23705.39
		97.5% Chebyshev (Mean, Sd) UCL		24919.29
		99% Chebyshev (Mean, Sd) UCL		27303.75

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Sodium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.942285
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842
Minimum	16400	Data are normal at 5% significance level	
Maximum	22600		
Mean	19700	95% UCL (Assuming Normal Distribution)	
Median	19600	Student's-t UCL	20626.68
Standard Deviation	1598.611		
Variance	25555556	Gamma Distribution Test	
Coefficient of Variation	0.081148	A-D Test Statistic	0.400754
Skewness	-0.370226	A-D 5% Critical Value	0.72385
		K-S Test Statistic	0.181266
		K-S 5% Critical Value	0.2658
Gamma Statistics			
k hat	164.3929	Data follow gamma distribution	
k star (bias corrected)	115.1417	at 5% significance level	
Theta hat	119.8349		
Theta star	171.0936	95% UCLs (Assuming Gamma Distribution)	
nu hat	3287.857	Approximate Gamma UCL	20692.97
nu star	2302.833	Adjusted Gamma UCL	20871.82
Approx. Chi Square Value (.05)	2192.33		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	2173.544	Shapiro-Wilk Test Statistic	0.928188
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	9.705037		
Maximum of log data	10.02571	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	9.885329	95% H-UCL	N/A
Standard Deviation of log data	0.082899	95% Chebyshev (MVUE) UCL	21953.37
Variance of log data	0.006872	97.5% Chebyshev (MVUE) UCL	22928.01
		99% Chebyshev (MVUE) UCL	24842.49
		95% Non-parametric UCLs	
		CLT UCL	20531.51
		Adj-CLT UCL (Adjusted for skewness)	20468.27
		Mod-t UCL (Adjusted for skewness)	20616.82
		Jackknife UCL	20626.68
		Standard Bootstrap UCL	20481.05
		Bootstrap-t UCL	20581.31
RECOMMENDATION		Hall's Bootstrap UCL	20629.57
Data are normal (0.05)		Percentile Bootstrap UCL	20470
		BCA Bootstrap UCL	20440
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	21903.53
		97.5% Chebyshev (Mean, Sd) UCL	22857
		99% Chebyshev (Mean, Sd) UCL	24729.91

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Thallium
Raw Statistics				
Number of Valid Samples	10	Normal Distribution Test		
Number of Unique Samples	10	Shapiro-Wilk Test Statistic	0.470157	
Minimum	0.0235	Shapiro-Wilk 5% Critical Value	0.842	
Maximum	0.39	Data not normal at 5% significance level		
Mean	0.0743	95% UCL (Assuming Normal Distribution)		
Median	0.037	Student's-t UCL	0.139128	
Standard Deviation	0.111833			
Variance	0.012507	Gamma Distribution Test		
Coefficient of Variation	1.505158	A-D Test Statistic	1.756327	
Skewness	3.070899	A-D 5% Critical Value	0.744055	
Gamma Statistics				
k hat	1.233146	K-S Test Statistic	0.363466	
k star (bias corrected)	0.929869	K-S 5% Critical Value	0.272524	
Theta hat	0.060252	Data do not follow gamma distribution		
Theta star	0.079904	at 5% significance level		
nu hat	24.66292	95% UCLs (Assuming Gamma Distribution)		
nu star	18.59738	Approximate Gamma UCL	0.140675	
Approx.Chi Square Value (.05)	9.82255	Adjusted Gamma UCL	0.158191	
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	8.734927	Shapiro-Wilk Test Statistic	0.71527	
Log-transformed Statistics				
Minimum of log data	-3.750755	Shapiro-Wilk 5% Critical Value	0.842	
Maximum of log data	-0.941609	Data not lognormal at 5% significance level		
Mean of log data	-3.057037	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.806695	95% H-UCL	0.135389	
Variance of log data	0.650756	95% Chebyshev (MVUE) UCL	0.134766	
		97.5% Chebyshev (MVUE) UCL	0.166007	
		99% Chebyshev (MVUE) UCL	0.227375	
95% Non-parametric UCLs				
		CLT UCL	0.13247	
		Adj-CLT UCL (Adjusted for skewness)	0.169166	
		Mod-t UCL (Adjusted for skewness)	0.144851	
		Jackknife UCL	0.139128	
		Standard Bootstrap UCL	0.130252	
		Bootstrap-t UCL	0.757068	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	0.451509	
Use 95% Chebyshev (Mean, Sd) UCL		Percentile Bootstrap UCL	0.14155	
		BCA Bootstrap UCL	0.17865	
		95% Chebyshev (Mean, Sd) UCL	0.228452	
		97.5% Chebyshev (Mean, Sd) UCL	0.295153	
		99% Chebyshev (Mean, Sd) UCL	0.426175	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Thallium
Raw Statistics				
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.592239	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.0115	Data not normal at 5% significance level		
Maximum	0.35			
Mean	0.06915	95% UCL (Assuming Normal Distribution)		
Median	0.025	Student's-t UCL	0.128923	
Standard Deviation	0.103114			
Variance	0.010633	Gamma Distribution Test		
Coefficient of Variation	1.491165	A-D Test Statistic	0.841741	
Skewness	2.719349	A-D 5% Critical Value	0.749972	
		K-S Test Statistic	0.285904	
Gamma Statistics		K-S 5% Critical Value	0.274186	
k hat	0.951087	Data do not follow gamma distribution		
k star (bias corrected)	0.732428	at 5% significance level		
Theta hat	0.072706			
Theta star	0.094412	95% UCLs (Assuming Gamma Distribution)		
nu hat	19.02174	Approximate Gamma UCL	0.144365	
nu star	14.64855	Adjusted Gamma UCL	0.165473	
Approx. Chi Square Value (.05)	7.016564			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	6.121538	Shapiro-Wilk Test Statistic	0.902096	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.465408			
Maximum of log data	-1.049822	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-3.282011	95% H-UCL	0.198913	
Standard Deviation of log data	1.047767	95% Chebyshev (MVUE) UCL	0.151839	
Variance of log data	1.097815	97.5% Chebyshev (MVUE) UCL	0.191441	
		99% Chebyshev (MVUE) UCL	0.269233	
		95% Non-parametric UCLs		
		CLT UCL	0.122785	
		Adj-CLT UCL (Adjusted for skewness)	0.152746	
		Mod-t UCL (Adjusted for skewness)	0.133597	
		Jackknife UCL	0.128923	
		Standard Bootstrap UCL	0.119238	
		Bootstrap-t UCL	0.32259	
RECOMMENDATION		Hall's Bootstrap UCL	0.33816	
Data are lognormal (0.05)		Percentile Bootstrap UCL	0.1268	
		BCA Bootstrap UCL	0.1529	
Use 95% Chebyshev (MVUE) UCL		95% Chebyshev (Mean, Sd) UCL	0.211283	
		97.5% Chebyshev (Mean, Sd) UCL	0.272784	
		99% Chebyshev (Mean, Sd) UCL	0.393591	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Titanium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.935074
Number of Unique Samples	7	Shapiro-Wilk 5% Critical Value	0.842
Minimum	2.4	Data are normal at 5% significance level	
Maximum	3.5		
Mean	3.05	95% UCL (Assuming Normal Distribution)	
Median	3	Student's-t UCL	3.254948
Standard Deviation	0.353553		
Variance	0.125	Gamma Distribution Test	
Coefficient of Variation	0.115919	A-D Test Statistic	0.368523
Skewness	-0.424264	A-D 5% Critical Value	0.72407
		K-S Test Statistic	0.17321
		K-S 5% Critical Value	0.265824
Gamma Statistics			
k hat	79.62628	Data follow gamma distribution	
k star (bias corrected)	55.80506	at 5% significance level	
Theta hat	0.038304		
Theta star	0.054655	95% UCLs (Assuming Gamma Distribution)	
nu hat	1592.526	Approximate Gamma UCL	3.274675
nu star	1116.101	Adjusted Gamma UCL	3.315733
Approx. Chi Square Value (.05)	1039.526		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	1026.653	Shapiro-Wilk Test Statistic	0.925532
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0.875469		
Maximum of log data	1.252763	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.108849	95% H-UCL	3.281623
Standard Deviation of log data	0.119512	95% Chebyshev (MVUE) UCL	3.553491
Variance of log data	0.014283	97.5% Chebyshev (MVUE) UCL	3.771179
		99% Chebyshev (MVUE) UCL	4.198786
		95% Non-parametric UCLs	
		CLT UCL	3.2339
		Adj-CLT UCL (Adjusted for skewness)	3.217873
		Mod-t UCL (Adjusted for skewness)	3.252448
		Jackknife UCL	3.254948
		Standard Bootstrap UCL	3.224079
		Bootstrap-t UCL	3.246537
RECOMMENDATION		Hall's Bootstrap UCL	3.216391
Data are normal (0.05)		Percentile Bootstrap UCL	3.22
		BCA Bootstrap UCL	3.22
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	3.53734
		97.5% Chebyshev (Mean, Sd) UCL	3.748212
		99% Chebyshev (Mean, Sd) UCL	4.16243

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Titanium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.963569	
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	3.8	Data are normal at 5% significance level		
Maximum	7.9			
Mean	5.66	95% UCL (Assuming Normal Distribution)		
Median	5.35	Student's-t UCL	6.408964	
Standard Deviation	1.292027			
Variance	1.669333	Gamma Distribution Test		
Coefficient of Variation	0.228273	A-D Test Statistic	0.225493	
Skewness	0.36818	A-D 5% Critical Value	0.724542	
		K-S Test Statistic	0.187983	
		K-S 5% Critical Value	0.266155	
Gamma Statistics				
k hat	21.47077	Data follow gamma distribution		
k star (bias corrected)	15.09621	at 5% significance level		
Theta hat	0.263614			
Theta star	0.374929	95% UCLs (Assuming Gamma Distribution)		
nu hat	429.4155	Approximate Gamma UCL	6.505966	
nu star	301.9242	Adjusted Gamma UCL	6.667652	
Approx.Chi Square Value (.05)	262.6652			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	256.2957	Shapiro-Wilk Test Statistic	0.973187	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	1.335001			
Maximum of log data	2.066863	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	1.709956	95% H-UCL	6.563981	
Standard Deviation of log data	0.228836	95% Chebyshev (MVUE) UCL	7.453108	
Variance of log data	0.052366	97.5% Chebyshev (MVUE) UCL	8.228874	
		99% Chebyshev (MVUE) UCL	9.752717	
		95% Non-parametric UCLs		
		CLT UCL	6.332046	
		Adj-CLT UCL (Adjusted for skewness)	6.382875	
		Mod-t UCL (Adjusted for skewness)	6.416892	
		Jackknife UCL	6.408964	
		Standard Bootstrap UCL	6.292955	
		Bootstrap-t UCL	6.548458	
RECOMMENDATION		Hall's Bootstrap UCL	6.400412	
Data are normal (0.05)		Percentile Bootstrap UCL	6.31	
		BCA Bootstrap UCL	6.35	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	7.440936	
		97.5% Chebyshev (Mean, Sd) UCL	8.211549	
		99% Chebyshev (Mean, Sd) UCL	9.725268	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Tungsten
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.513532
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.075	Data not normal at 5% significance level	
Maximum	0.87		
Mean	0.1975	95% UCL (Assuming Normal Distribution)	
Median	0.1225	Student's-t UCL	0.336343
Standard Deviation	0.239516		
Variance	0.057368	Gamma Distribution Test	
Coefficient of Variation	1.212741	A-D Test Statistic	1.402216
Skewness	3.009178	A-D 5% Critical Value	0.73778
		K-S Test Statistic	0.296313
		K-S 5% Critical Value	0.270599
Gamma Statistics			
k hat	1.698681	Data do not follow gamma distribution	
k star (bias corrected)	1.255743	at 5% significance level	
Theta hat	0.116267		
Theta star	0.157277	95% UCLs (Assuming Gamma Distribution)	
nu hat	33.97361	Approximate Gamma UCL	0.337478
nu star	25.11486	Adjusted Gamma UCL	0.372084
Approx.Chi Square Value (.05)	14.6978		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	13.33081	Shapiro-Wilk Test Statistic	0.76766
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-2.590267		
Maximum of log data	-0.139262	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.944368	95% H-UCL	0.332204
Standard Deviation of log data	0.70337	95% Chebyshev (MVUE) UCL	0.35593
Variance of log data	0.494729	97.5% Chebyshev (MVUE) UCL	0.432927
		99% Chebyshev (MVUE) UCL	0.584172
		95% Non-parametric UCLs	
		CLT UCL	0.322084
		Adj-CLT UCL (Adjusted for skewness)	0.399097
		Mod-t UCL (Adjusted for skewness)	0.348356
		Jackknife UCL	0.336343
		Standard Bootstrap UCL	0.314769
		Bootstrap-t UCL	0.905905
RECOMMENDATION		Hall's Bootstrap UCL	0.806127
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.3425
		BCA Bootstrap UCL	0.4185
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	0.52765
		97.5% Chebyshev (Mean, Sd) UCL	0.670507
		99% Chebyshev (Mean, Sd) UCL	0.95112

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Uranium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.973081	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.008	Data are normal at 5% significance level		
Maximum	0.026			
Mean	0.0171	95% UCL (Assuming Normal Distribution)		
Median	0.0165	Student's-t UCL	0.019906	
Standard Deviation	0.004841			
Variance	2.34E-005	Gamma Distribution Test		
Coefficient of Variation	0.283088	A-D Test Statistic	0.308094	
Skewness	-0.02483	A-D 5% Critical Value	0.724943	
		K-S Test Statistic	0.180247	
		K-S 5% Critical Value	0.266524	
Gamma Statistics				
k hat	12.29886	Data follow gamma distribution		
k star (bias corrected)	8.675867	at 5% significance level		
Theta hat	0.00139			
Theta star	0.001971	95% UCLs (Assuming Gamma Distribution)		
nu hat	245.9771	Approximate Gamma UCL	0.020598	
nu star	173.5173	Adjusted Gamma UCL	0.021288	
Approx.Chi Square Value (.05)	144.0481			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	139.3826	Shapiro-Wilk Test Statistic	0.917044	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.828314			
Maximum of log data	-3.649659	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-4.109882	95% H-UCL	0.021296	
Standard Deviation of log data	0.316647	95% Chebyshev (MVUE) UCL	0.024714	
Variance of log data	0.100265	97.5% Chebyshev (MVUE) UCL	0.02798	
		99% Chebyshev (MVUE) UCL	0.034397	
		95% Non-parametric UCLs		
		CLT UCL	0.019618	
		Adj-CLT UCL (Adjusted for skewness)	0.019605	
		Mod-t UCL (Adjusted for skewness)	0.019904	
		Jackknife UCL	0.019906	
		Standard Bootstrap UCL	0.019566	
		Bootstrap-t UCL	0.019945	
		Hall's Bootstrap UCL	0.02017	
		Percentile Bootstrap UCL	0.0195	
		BCA Bootstrap UCL	0.0195	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	0.023773	
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	0.02666	
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	0.032331	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Uranium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.761232	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.0075	Data not normal at 5% significance level		
Maximum	0.039			
Mean	0.0182	95% UCL (Assuming Normal Distribution)		
Median	0.0155	Student's-t UCL	0.024329	
Standard Deviation	0.010573			
Variance	0.000112	Gamma Distribution Test		
Coefficient of Variation	0.580936	A-D Test Statistic	0.809211	
Skewness	1.473441	A-D 5% Critical Value	0.729398	
		K-S Test Statistic	0.311956	
		K-S 5% Critical Value	0.267769	
Gamma Statistics				
k hat	4.13079	Data do not follow gamma distribution		
k star (bias corrected)	2.95822	at 5% significance level		
Theta hat	0.004406			
Theta star	0.006152	95% UCLs (Assuming Gamma Distribution)		
nu hat	82.61581	Approximate Gamma UCL	0.025351	
nu star	59.1644	Adjusted Gamma UCL	0.0269	
Approx.Chi Square Value (.05)	42.47566			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	40.02895	Shapiro-Wilk Test Statistic	0.889836	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.892852			
Maximum of log data	-3.244194	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-4.132232	95% H-UCL	0.026667	
Standard Deviation of log data	0.508712	95% Chebyshev (MVUE) UCL	0.030867	
Variance of log data	0.258787	97.5% Chebyshev (MVUE) UCL	0.036432	
		99% Chebyshev (MVUE) UCL	0.047362	
		95% Non-parametric UCLs		
		CLT UCL	0.0237	
		Adj-CLT UCL (Adjusted for skewness)	0.025364	
		Mod-t UCL (Adjusted for skewness)	0.024589	
		Jackknife UCL	0.024329	
		Standard Bootstrap UCL	0.023527	
		Bootstrap-t UCL	0.035433	
		Hall's Bootstrap UCL	0.068837	
		Percentile Bootstrap UCL	0.02385	
		BCA Bootstrap UCL	0.0253	
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	0.032774	
Data are lognormal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	0.03908	
Use H-UCL		99% Chebyshev (Mean, Sd) UCL	0.051467	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Uranium-2
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.973081	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.008	Data are normal at 5% significance level		
Maximum	0.026			
Mean	0.0171	95% UCL (Assuming Normal Distribution)		
Median	0.0165	Student's-t UCL	0.019906	
Standard Deviation	0.004841			
Variance	2.34E-005	Gamma Distribution Test		
Coefficient of Variation	0.283088	A-D Test Statistic	0.308094	
Skewness	-0.02483	A-D 5% Critical Value	0.724943	
		K-S Test Statistic	0.180247	
		K-S 5% Critical Value	0.266524	
Gamma Statistics				
k hat	12.29886	Data follow gamma distribution		
k star (bias corrected)	8.675867	at 5% significance level		
Theta hat	0.00139			
Theta star	0.001971	95% UCLs (Assuming Gamma Distribution)		
nu hat	245.9771	Approximate Gamma UCL	0.020598	
nu star	173.5173	Adjusted Gamma UCL	0.021288	
Approx.Chi Square Value (.05)	144.0481			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	139.3826	Shapiro-Wilk Test Statistic	0.917044	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.828314			
Maximum of log data	-3.649659	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-4.109882	95% H-UCL	0.021296	
Standard Deviation of log data	0.316647	95% Chebyshev (MVUE) UCL	0.024714	
Variance of log data	0.100265	97.5% Chebyshev (MVUE) UCL	0.02798	
		99% Chebyshev (MVUE) UCL	0.034397	
		95% Non-parametric UCLs		
		CLT UCL	0.019618	
		Adj-CLT UCL (Adjusted for skewness)	0.019605	
		Mod-t UCL (Adjusted for skewness)	0.019904	
		Jackknife UCL	0.019906	
		Standard Bootstrap UCL	0.019437	
		Bootstrap-t UCL	0.020027	
		Hall's Bootstrap UCL	0.020318	
		Percentile Bootstrap UCL	0.0194	
		BCA Bootstrap UCL	0.0193	
RECOMMENDATION				
Data are normal (0.05)		95% Chebyshev (Mean, Sd) UCL	0.023773	
Use Student's-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.02666	
		99% Chebyshev (Mean, Sd) UCL	0.032331	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Uranium-2
Raw Statistics			Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.761232	
Number of Unique Samples	8	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.0075	Data not normal at 5% significance level		
Maximum	0.039			
Mean	0.0182	95% UCL (Assuming Normal Distribution)		
Median	0.0155	Student's-t UCL	0.024329	
Standard Deviation	0.010573			
Variance	0.000112	Gamma Distribution Test		
Coefficient of Variation	0.580936	A-D Test Statistic	0.809211	
Skewness	1.473441	A-D 5% Critical Value	0.729398	
		K-S Test Statistic	0.311956	
		K-S 5% Critical Value	0.267769	
Gamma Statistics				
k hat	4.13079	Data do not follow gamma distribution		
k star (bias corrected)	2.95822	at 5% significance level		
Theta hat	0.004406			
Theta star	0.006152	95% UCLs (Assuming Gamma Distribution)		
nu hat	82.61581	Approximate Gamma UCL	0.025351	
nu star	59.1644	Adjusted Gamma UCL	0.0269	
Approx.Chi Square Value (.05)	42.47566			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	40.02895	Shapiro-Wilk Test Statistic	0.889836	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data are lognormal at 5% significance level		
Minimum of log data	-4.892852			
Maximum of log data	-3.244194	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-4.132232	95% H-UCL	0.026667	
Standard Deviation of log data	0.508712	95% Chebyshev (MVUE) UCL	0.030867	
Variance of log data	0.258787	97.5% Chebyshev (MVUE) UCL	0.036432	
		99% Chebyshev (MVUE) UCL	0.047362	
		95% Non-parametric UCLs		
		CLT UCL	0.0237	
		Adj-CLT UCL (Adjusted for skewness)	0.025364	
		Mod-t UCL (Adjusted for skewness)	0.024589	
		Jackknife UCL	0.024329	
		Standard Bootstrap UCL	0.023383	
		Bootstrap-t UCL	0.03605	
RECOMMENDATION		Hall's Bootstrap UCL	0.071086	
Data are lognormal (0.05)		Percentile Bootstrap UCL	0.02385	
		BCA Bootstrap UCL	0.02505	
Use H-UCL		95% Chebyshev (Mean, Sd) UCL	0.032774	
		97.5% Chebyshev (Mean, Sd) UCL	0.03908	
		99% Chebyshev (Mean, Sd) UCL	0.051467	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	Zinc	D
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.980379
Number of Unique Samples	10	Shapiro-Wilk 5% Critical Value	0.842
Minimum	22.1	Data are normal at 5% significance level	
Maximum	38.1		
Mean	29.69	95% UCL (Assuming Normal Distribution)	
Median	29.65	Student's-t UCL	32.56583
Standard Deviation	4.961059		
Variance	24.61211	Gamma Distribution Test	
Coefficient of Variation	0.167095	A-D Test Statistic	0.159266
Skewness	0.190321	A-D 5% Critical Value	0.724445
		K-S Test Statistic	0.127518
		K-S 5% Critical Value	0.265968
Gamma Statistics			
k hat	39.59611	Data follow gamma distribution	
k star (bias corrected)	27.78395	at 5% significance level	
Theta hat	0.749821		
Theta star	1.068603	95% UCLs (Assuming Gamma Distribution)	
nu hat	791.9223	Approximate Gamma UCL	32.86518
nu star	555.6789	Adjusted Gamma UCL	33.45719
Approx.Chi Square Value (.05)	501.9936		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	493.111	Shapiro-Wilk Test Statistic	0.982862
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	3.095578		
Maximum of log data	3.640214	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	3.37813	95% H-UCL	32.99787
Standard Deviation of log data	0.168462	95% Chebyshev (MVUE) UCL	36.60282
Variance of log data	0.02838	97.5% Chebyshev (MVUE) UCL	39.59303
		99% Chebyshev (MVUE) UCL	45.46672
		95% Non-parametric UCLs	
		CLT UCL	32.27049
		Adj-CLT UCL (Adjusted for skewness)	32.37138
		Mod-t UCL (Adjusted for skewness)	32.58157
		Jackknife UCL	32.56583
		Standard Bootstrap UCL	32.14152
		Bootstrap-t UCL	32.89297
RECOMMENDATION		Hall's Bootstrap UCL	32.41736
Data are normal (0.05)		Percentile Bootstrap UCL	32.08
		BCA Bootstrap UCL	32.17
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	36.52835
		97.5% Chebyshev (Mean, Sd) UCL	39.48731
		99% Chebyshev (Mean, Sd) UCL	45.29961

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Zinc	T
Raw Statistics			Normal Distribution Test		
Number of Valid Samples	10		Shapiro-Wilk Test Statistic	0.942235	
Number of Unique Samples	10		Shapiro-Wilk 5% Critical Value	0.842	
Minimum	22.5		Data are normal at 5% significance level		
Maximum	45.5				
Mean	34.4		95% UCL (Assuming Normal Distribution)		
Median	34.85		Student's-t UCL	37.87497	
Standard Deviation	5.994627				
Variance	35.93556		Gamma Distribution Test		
Coefficient of Variation	0.174262		A-D Test Statistic	0.432734	
Skewness	-0.13018		A-D 5% Critical Value	0.724473	
			K-S Test Statistic	0.20606	
			K-S 5% Critical Value	0.26602	
Gamma Statistics					
k hat	34.49762		Data follow gamma distribution		
k star (bias corrected)	24.215		at 5% significance level		
Theta hat	0.99717				
Theta star	1.420607		95% UCLs (Assuming Gamma Distribution)		
nu hat	689.9525		Approximate Gamma UCL	38.36393	
nu star	484.3001		Adjusted Gamma UCL	39.10664	
Approx.Chi Square Value (.05)	434.26				
Adjusted Level of Significance	0.0267		Lognormal Distribution Test		
Adjusted Chi Square Value	426.0126		Shapiro-Wilk Test Statistic	0.911693	
			Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics			Data are lognormal at 5% significance level		
Minimum of log data	3.113515				
Maximum of log data	3.817712		95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	3.523493		95% H-UCL	38.65535	
Standard Deviation of log data	0.183699		95% Chebyshev (MVUE) UCL	43.16001	
Variance of log data	0.033745		97.5% Chebyshev (MVUE) UCL	46.94153	
			99% Chebyshev (MVUE) UCL	54.3696	
			95% Non-parametric UCLs		
			CLT UCL	37.5181	
			Adj-CLT UCL (Adjusted for skewness)	37.43471	
			Mod-t UCL (Adjusted for skewness)	37.86197	
			Jackknife UCL	37.87497	
			Standard Bootstrap UCL	37.48511	
			Bootstrap-t UCL	37.82232	
RECOMMENDATION			Hall's Bootstrap UCL	38.3705	
Data are normal (0.05)			Percentile Bootstrap UCL	37.22	
			BCA Bootstrap UCL	37.45	
Use Student's-t UCL			95% Chebyshev (Mean, Sd) UCL	42.66302	
			97.5% Chebyshev (Mean, Sd) UCL	46.23844	
			99% Chebyshev (Mean, Sd) UCL	53.26165	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3005/6020	Zirconium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.365957	
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.25	Data not normal at 5% significance level		
Maximum	0.53			
Mean	0.278	95% UCL (Assuming Normal Distribution)		
Median	0.25	Student's-t UCL	0.329327	
Standard Deviation	0.088544			
Variance	0.00784	Gamma Distribution Test		
Coefficient of Variation	0.318503	A-D Test Statistic	3.302579	
Skewness	3.162278	A-D 5% Critical Value	0.72474	
Gamma Statistics		K-S Test Statistic	0.532136	
k hat	16.28428	K-S 5% Critical Value	0.266341	
k star (bias corrected)	11.46567	Data do not follow gamma distribution		
Theta hat	0.017072	at 5% significance level		
Theta star	0.024246	95% UCLs (Assuming Gamma Distribution)		
nu hat	325.6857	Approximate Gamma UCL	0.326493	
nu star	229.3133	Adjusted Gamma UCL	0.335893	
Approx. Chi Square Value (.05)	195.2541			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	189.7899	Shapiro-Wilk Test Statistic	0.365957	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-1.386294			
Maximum of log data	-0.634878	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-1.311153	95% H-UCL	0.322635	
Standard Deviation of log data	0.237619	95% Chebyshev (MVUE) UCL	0.367374	
Variance of log data	0.056463	97.5% Chebyshev (MVUE) UCL	0.406727	
		99% Chebyshev (MVUE) UCL	0.484027	
		95% Non-parametric UCLs		
		CLT UCL	0.324056	
		Adj-CLT UCL (Adjusted for skewness)	0.353974	
		Mod-t UCL (Adjusted for skewness)	0.333994	
		Jackknife UCL	0.329327	
		Standard Bootstrap UCL	N/R	
		Bootstrap-t UCL	N/R	
RECOMMENDATION		Hall's Bootstrap UCL	N/A	
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R	
		BCA Bootstrap UCL	N/R	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.400049	
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.45286	
		99% Chebyshev (Mean, Sd) UCL	0.556596	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3005/6020	Zirconium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.509631
Number of Unique Samples	2	Shapiro-Wilk 5% Critical Value	0.842
Minimum	0.25	Data not normal at 5% significance level	
Maximum	1.1		
Mean	0.42	95% UCL (Assuming Normal Distribution)	
Median	0.25	Student's-t UCL	0.627753
Standard Deviation	0.358391		
Variance	0.128444	Gamma Distribution Test	
Coefficient of Variation	0.853313	A-D Test Statistic	2.681538
Skewness	1.778781	A-D 5% Critical Value	0.734217
		K-S Test Statistic	0.496835
		K-S 5% Critical Value	0.269265
Gamma Statistics			
k hat	2.400962	Data do not follow gamma distribution	
k star (bias corrected)	1.74734	at 5% significance level	
Theta hat	0.17493		
Theta star	0.240365	95% UCLs (Assuming Gamma Distribution)	
nu hat	48.01924	Approximate Gamma UCL	0.654661
nu star	34.9468	Adjusted Gamma UCL	0.709351
Approx.Chi Square Value (.05)	22.42023		
Adjusted Level of Significance	0.0267	Lognormal Distribution Test	
Adjusted Chi Square Value	20.69166	Shapiro-Wilk Test Statistic	0.509631
		Shapiro-Wilk 5% Critical Value	0.842
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-1.386294		
Maximum of log data	0.09531	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.089973	95% H-UCL	0.674605
Standard Deviation of log data	0.624699	95% Chebyshev (MVUE) UCL	0.752798
Variance of log data	0.390249	97.5% Chebyshev (MVUE) UCL	0.905588
		99% Chebyshev (MVUE) UCL	1.205715
		95% Non-parametric UCLs	
		CLT UCL	0.606417
		Adj-CLT UCL (Adjusted for skewness)	0.674535
		Mod-t UCL (Adjusted for skewness)	0.638378
		Jackknife UCL	0.627753
		Standard Bootstrap UCL	N/R
		Bootstrap-t UCL	N/R
RECOMMENDATION		Hall's Bootstrap UCL	N/A
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	N/R
		BCA Bootstrap UCL	N/R
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	0.914009
		97.5% Chebyshev (Mean, Sd) UCL	1.127766
		99% Chebyshev (Mean, Sd) UCL	1.547652

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 7470A	Mercury	D
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	10	Shapiro-Wilk Test Statistic	0.728185	
Number of Unique Samples	5	Shapiro-Wilk 5% Critical Value	0.842	
Minimum	0.0165	Data not normal at 5% significance level		
Maximum	0.048			
Mean	0.0267	95% UCL (Assuming Normal Distribution)		
Median	0.0165	Student's-t UCL	0.034569	
Standard Deviation	0.013575			
Variance	0.000184	Gamma Distribution Test		
Coefficient of Variation	0.508438	A-D Test Statistic	1.479923	
Skewness	0.685582	A-D 5% Critical Value	0.729431	
		K-S Test Statistic	0.389497	
		K-S 5% Critical Value	0.267552	
Gamma Statistics				
k hat	4.687669	Data do not follow gamma distribution		
k star (bias corrected)	3.348035	at 5% significance level		
Theta hat	0.005696			
Theta star	0.007975	95% UCLs (Assuming Gamma Distribution)		
nu hat	93.75338	Approximate Gamma UCL	0.036394	
nu star	66.9607	Adjusted Gamma UCL	0.038465	
Approx.Chi Square Value (.05)	49.12524			
Adjusted Level of Significance	0.0267	Lognormal Distribution Test		
Adjusted Chi Square Value	46.48004	Shapiro-Wilk Test Statistic	0.707068	
		Shapiro-Wilk 5% Critical Value	0.842	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-4.104395			
Maximum of log data	-3.036554	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-3.73353	95% H-UCL	0.038399	
Standard Deviation of log data	0.485469	95% Chebyshev (MVUE) UCL	0.04463	
Variance of log data	0.23568	97.5% Chebyshev (MVUE) UCL	0.05245	
		99% Chebyshev (MVUE) UCL	0.067812	
		95% Non-parametric UCLs		
		CLT UCL	0.033761	
		Adj-CLT UCL (Adjusted for skewness)	0.034756	
		Mod-t UCL (Adjusted for skewness)	0.034724	
		Jackknife UCL	0.034569	
		Standard Bootstrap UCL	0.033381	
		Bootstrap-t UCL	0.037771	
		Hall's Bootstrap UCL	0.031928	
		Percentile Bootstrap UCL	0.0338	
		BCA Bootstrap UCL	0.0338	
RECOMMENDATION				
Data are Non-parametric (0.05)		95% Chebyshev (Mean, Sd) UCL	0.045412	
Use Student's-t UCL or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	0.053509	
		99% Chebyshev (Mean, Sd) UCL	0.069414	

Table 20
Summary Statistics
Hudson Bog Sediment and Peat Combined

Parameter	Frequency of Detection	Percent Detected	Range of NonDetects	Range of Detected Concentrations	Mean	Std Dev	CV	Skewness	Distribution	95% UCL on the mean	Method	95th Percentile	95/95 UTL	Maximum Detected	Mean 3 SD	+	Recommended UL
Semivolatile Organics (ug/Kg)																	
Benzo[a]anthracene	1 / 15	7%	102 : 188	78 - 78	63.0	12.3	0.195	1.24	Poisson					134	78		78
Benzo[b]fluoranthene	6 / 15	40%	102 : 153	109 - 373	112	90.1	0.806	2.02	Non-parametric	213	95% Chebyshev (Mean, Sd) UCL	373	*	373		373	
Benzo[k]fluoranthene	3 / 15	20%	102 : 188	70 - 77	64.0	12.4	0.194	0.899	Non-parametric	69.7	Student's-t UCL [a]	77	*	77		77	
Benzoic Acid	9 / 15	60%	2030 : 2430	676 - 4520	1560	1076	0.690	2.21	Non-parametric	2771	95% Chebyshev (Mean, Sd) UCL	4520	*	4520		4520	
Bis(2-chloroethyl)ether	1 / 15	7%		231 - 231		151	0.252	-0.191	Poisson					1150	231		231
Butylbenzylphthalate	1 / 15	7%	1020 : 1880	2390 - 2390	727	473	0.650	3.55	Poisson					1600	2390		1600
Chrysene	4 / 15	27%	102 : 153	53 - 122	67.1	19.4	0.289	1.85	G/NP	76.0	Approximate Gamma UCL	122		122		122	
Diethylphthalate	5 / 15	33%	1020 : 1880	296 - 15700	1555	25.2	0.400	-0.089	Non-parametric					15700	*	15700	
Diethylphthalate (outlier removed)	4 / 14	29%	1020 : 1880	296 - 521	545	157	0.288	0.797	Non-parametric	619	Student's-t UCL [a]	521	*	521		521	
Fluoranthene	7 / 15	47%	102 : 153	62 - 200	88.4	47.3	0.535	1.54	Non-parametric	111	Mod-t UCL (Adjusted for skewness)	200	*	200		200	
m+pMethylphenol	9 / 15	60%	1020 : 1880	705 - 6960	2590	2201	0.850	0.669	G/NP	4097	Approximate Gamma UCL	6960	*	6960		6960	
Phenanthrene	12 / 15	80%	102 : 131	54 - 133	81.2	24.7	0.304	0.821	Normal	92.5	Student's-t UCL	125	145	133	155	125	
Phenol	7 / 15	47%	1020 : 1880	229 - 2010	724	421	0.580	2.14	G/NP	929	Approximate Gamma UCL	2010	*	2010		2010	
Pyrene	9 / 15	60%	122 : 153	50 - 179	94	47.5	0.503	1.02	G/NP	118	Approximate Gamma UCL	179	*	179		179	
Inorganics (mg/Kg)																	
Aluminum	15 / 15	100%		2370 - 5310	3489	848	0.243	0.982	Normal	3875	Student's-t UCL	4982	5664	5310	6032	4982	
Arsenic	15 / 15	100%		1.1 - 4.0	3.13	0.918	0.293	-1.09	Non-parametric	3.54	Mod-t UCL (Adjusted for skewness)	4.00	*	4.00		4.00	
Barium	15 / 15	100%		9.1 - 47.5	28.4	9.97	0.351	-0.127	Normal	32.9	Student's-t UCL	46.0	54.0	47.5	58.3	46.0	
Beryllium	15 / 15	100%		0.15 - 0.54	0.338	0.122	0.362	-0.078	Normal	0.394	Student's-t UCL	0.554	0.652	0.540	0.705	0.540	
Cadmium	15 / 15	100%		0.088 - 0.46	0.299	0.105	0.350	-0.258	Normal	0.347	Student's-t UCL	0.484	0.568	0.460	0.613	0.460	
Calcium	15 / 15	100%		170 - 1960	1061	630	0.594	-0.025	Normal	1348	Student's-t UCL	2171	2678	1960	2952	1960	
Chromium	15 / 15	100%		3.8 - 8.0	4.97	1.19	0.239	1.46	Lognormal	5.52	Approximate Gamma UCL			8.00			
Log-transformed					1.58	0.216			Lognormal				7.09	8.45	8.00	9.27	7.09
Cobalt	15 / 15	100%		0.52 - 1.6	1.10	0.371	0.338	-0.431	Normal	1.27	Student's-t UCL	1.75	2.05	1.60	2.21	1.60	
Copper	15 / 15	100%		1.7 - 10.3	6.96	2.93	0.420	-0.647	Non-parametric	10.3	95% Chebyshev (Mean, Sd) UCL	10.3	*	10.3		10.3	
Iron	15 / 15	100%		1610 - 4440	2851	809	0.284	-0.005	Normal	3219	Student's-t UCL	4276	4927	4440	5278	4276	
Lead	15 / 15	100%		13.2 - 60.7	33.1	12.6	0.381	0.858	Normal	38.8	Student's-t UCL	55.2	65.4	60.7	70.8	55.2	
Magnesium	15 / 15	100%		110 - 429	244	104	0.424	0.352	Normal	291	Student's-t UCL	426	510	429	555	426	
Manganese	15 / 15	100%		7.9 - 38	18.6	7.14	0.383	1.38	Normal	21.9	Student's-t UCL	31.2	37.0	38.0	40.1	31.2	
Mercury	15 / 15	100%		0.038 - 0.078	0.0521	0.0132	0.253	0.694	Normal	0.058	Student's-t UCL	0.0754	0.0860	0.0780	0.0917	0.0754	
Molybdenum	11 / 15	73%	0.19 : 0.45	0.48 - 1.0	0.659	0.329	0.498	-0.797	Non-parametric	1.03	95% Chebyshev (Mean, Sd) UCL	1.00	*	1.00		1.00	
Nickel	15 / 15	100%		2.6 - 5.7	4.27	1.04	0.244	-0.422	Normal	4.75	Student's-t UCL	6.11	6.95	5.70	7.40	5.70	
Potassium	15 / 15	100%		144 - 378	236	55.3			Normal			333	378	378	402		
Potassium (outlier removed)	14 / 14	100%		144 - 254	226	55.3	0.234	1.01	Normal	261	Student's-t UCL	324	332	254	392	254	
Selenium	15 / 15	100%		0.4 - 2.1	1.49	0.508	0.341	-0.980	Non-parametric	1.72	Mod-t UCL (Adjusted for skewness)	2.10	*	2.10		2.10	
Silver	14 / 15	93%	0.03 : 0.026	0.05 - 0.14	0.0893	0.0322	0.361	-0.758	Normal	0.104	Student's-t UCL	0.146	0.172	0.14	0.186	0.140	
Sodium	15 / 15	100%		59.9 - 389	221	110	0.496	-0.261	Normal	271	Student's-t UCL	415	503	389	551	389	
Thallium	15 / 15	100%		0.036 - 0.075	0.0496	0.0109	0.219	0.975	Normal	0.055	Student's-t UCL	0.0688	0.0780	0.0750	0.0822	0.0688	
Thorium	15 / 15	100%		0.39 - 2.8	1.31	0.699	0.535	0.464	Normal	1.63	Student's-t UCL	2.54	3.10	2.80	3.40	2.54	
Titanium	15 / 15	100%		66.3 - 157	99.2	31.8	0.321	0.831	Lognormal	115	Approximate Gamma UCL			157			
Log-transformed					4.6	0.304			Lognormal				162	207	157	236	157
Tungsten	12 / 15	80%	0.09 : 0.29	0.26 - 1.3	0.49	0.344	0.707	1.16	Normal	0.643	Student's-t UCL	1.09	1.37	1.30	1.52	1.09	
Uranium	15 / 15	100%		0.7 - 2.2	1.14	0.397	0.348	1.48	Lognormal	1.33	Approximate Gamma UCL			2.20			
Log-transformed					0.0846	0.314			Lognormal				1.89	2.44	2.20	2.79	1.89
Vanadium	15 / 15	100%		4.5 - 12.1	8.57	2.24	0.261	-0.186	Normal	9.59	Student's-t UCL	12.5	14.3	12.1	15.3	12.1	
Zinc	15 / 15	100%		6.8 - 29.3	18.7	7.34	0.393	0.089	Normal	22.0	Student's-t UCL	31.6	37.5	29.3	40.7	29.3	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Aluminum
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.906966	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	2370	Data are normal at 5% significance level		
Maximum	5310			
Mean	3489.333	95% UCL (Assuming Normal Distribution)		
Median	3300	Student's-t UCL	3874.786	
Standard Deviation	847.5803			
Variance	718392.4	Gamma Distribution Test		
Coefficient of Variation	0.242906	A-D Test Statistic	0.448017	
Skewness	0.982052	A-D 5% Critical Value	0.734707	
Gamma Statistics				
k hat	19.82669	K-S Test Statistic	0.198106	
k star (bias corrected)	15.90579	K-S 5% Critical Value	0.221196	
Theta hat	175.9918	Data follow gamma distribution		
Theta star	219.375	at 5% significance level		
nu hat	594.8006	95% UCLs (Assuming Gamma Distribution)		
nu star	477.1738	Approximate Gamma UCL	3894.67	
Approx.Chi Square Value (.05)	427.512	Adjusted Gamma UCL	3948.111	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	421.7253	Shapiro-Wilk Test Statistic	0.951651	
Log-transformed Statistics				
Minimum of log data	7.770645	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	8.577347	Data are lognormal at 5% significance level		
Mean of log data	8.132036	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.229361	95% H-UCL	3906.748	
Variance of log data	0.052607	95% Chebyshev (MVUE) UCL	4392.125	
		97.5% Chebyshev (MVUE) UCL	4784.15	
		99% Chebyshev (MVUE) UCL	5554.206	
95% Non-parametric UCLs				
		CLT UCL	3849.3	
		Adj-CLT UCL (Adjusted for skewness)	3908.593	
		Mod-t UCL (Adjusted for skewness)	3884.035	
		Jackknife UCL	3874.786	
		Standard Bootstrap UCL	3824.927	
		Bootstrap-t UCL	3987.138	
		Hall's Bootstrap UCL	3977.249	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	3850.667	
		BCA Bootstrap UCL	3865.333	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	4443.253	
		97.5% Chebyshev (Mean, Sd) UCL	4856.016	
		99% Chebyshev (Mean, Sd) UCL	5666.807	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Arsenic
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.834259	
Number of Unique Samples	11	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	1.1	Data not normal at 5% significance level		
Maximum	4			
Mean	3.133333	95% UCL (Assuming Normal Distribution)		
Median	3.6	Student's-t UCL	3.550726	
Standard Deviation	0.917813			
Variance	0.842381	Gamma Distribution Test		
Coefficient of Variation	0.292919	A-D Test Statistic	1.292621	
Skewness	-1.094237	A-D 5% Critical Value	0.737586	
Gamma Statistics				
k hat	9.154504	K-S Test Statistic	0.273841	
k star (bias corrected)	7.368047	K-S 5% Critical Value	0.221606	
Theta hat	0.342272	Data do not follow gamma distribution		
Theta star	0.42526	at 5% significance level		
nu hat	274.6351	95% UCLs (Assuming Gamma Distribution)		
nu star	221.0414	Approximate Gamma UCL	3.691404	
Approx.Chi Square Value (.05)	187.6241	Adjusted Gamma UCL	3.767495	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	183.8347	Shapiro-Wilk Test Statistic	0.77365	
Log-transformed Statistics				
Minimum of log data	0.09531	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	1.386294	Data not lognormal at 5% significance level		
Mean of log data	1.086486	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.37709	95% H-UCL	3.872196	
Variance of log data	0.142197	95% Chebyshev (MVUE) UCL	4.533914	
		97.5% Chebyshev (MVUE) UCL	5.12567	
		99% Chebyshev (MVUE) UCL	6.28806	
95% Non-parametric UCLs				
		CLT UCL	3.523128	
		Adj-CLT UCL (Adjusted for skewness)	3.451587	
		Mod-t UCL (Adjusted for skewness)	3.539567	
		Jackknife UCL	3.550726	
		Standard Bootstrap UCL	3.501928	
		Bootstrap-t UCL	3.491466	
RECOMMENDATION				
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	3.448083	
		Percentile Bootstrap UCL	3.486667	
		BCA Bootstrap UCL	3.44	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	4.166298	
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	4.613263	
		99% Chebyshev (Mean, Sd) UCL	5.491238	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Barium
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.983082	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	9.1	Data are normal at 5% significance level		
Maximum	47.5			
Mean	28.39333	95% UCL (Assuming Normal Distribution)		
Median	29.2	Student's-t UCL	32.92844	
Standard Deviation	9.972352			
Variance	99.44781	Gamma Distribution Test		
Coefficient of Variation	0.351222	A-D Test Statistic	0.393334	
Skewness	-0.127406	A-D 5% Critical Value	0.738056	
Gamma Statistics				
k hat	7.12874	Data follow gamma distribution		
k star (bias corrected)	5.747436	at 5% significance level		
Theta hat	3.982939			
Theta star	4.940174	95% UCLs (Assuming Gamma Distribution)		
nu hat	213.8622	Approximate Gamma UCL	34.22327	
nu star	172.4231	Adjusted Gamma UCL	35.02952	
Approx.Chi Square Value (.05)	143.0508			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	139.7583	Shapiro-Wilk Test Statistic	0.911505	
Log-transformed Statistics				
Minimum of log data	2.208274	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	3.86073	Data are lognormal at 5% significance level		
Mean of log data	3.274379			
Standard Deviation of log data	0.42124	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.177443	95% H-UCL	36.12263	
		95% Chebyshev (MVUE) UCL	42.59743	
		97.5% Chebyshev (MVUE) UCL	48.61254	
		99% Chebyshev (MVUE) UCL	60.42804	
95% Non-parametric UCLs				
		CLT UCL	32.62859	
		Adj-CLT UCL (Adjusted for skewness)	32.53808	
		Mod-t UCL (Adjusted for skewness)	32.91433	
		Jackknife UCL	32.92844	
		Standard Bootstrap UCL	32.46229	
		Bootstrap-t UCL	32.73836	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	32.78844	
		Percentile Bootstrap UCL	32.5	
		BCA Bootstrap UCL	32.29333	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	39.61685	
		97.5% Chebyshev (Mean, Sd) UCL	44.47327	
		99% Chebyshev (Mean, Sd) UCL	54.01277	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Beryllium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.946305
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.15	Data are normal at 5% significance level	
Maximum	0.54		
Mean	0.338	95% UCL (Assuming Normal Distribution)	
Median	0.36	Student's-t UCL	0.393676
Standard Deviation	0.122428		
Variance	0.014989	Gamma Distribution Test	
Coefficient of Variation	0.362212	A-D Test Statistic	0.463158
Skewness	-0.078053	A-D 5% Critical Value	0.738022
Gamma Statistics		K-S Test Statistic	0.188946
k hat	7.276906	K-S 5% Critical Value	0.22182
k star (bias corrected)	5.865969	Data follow gamma distribution	
Theta hat	0.046448	at 5% significance level	
Theta star	0.05762	95% UCLs (Assuming Gamma Distribution)	
nu hat	218.3072	Approximate Gamma UCL	0.406588
nu star	175.9791	Adjusted Gamma UCL	0.416061
Approx.Chi Square Value (.05)	146.2929		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	142.9619	Shapiro-Wilk Test Statistic	0.924648
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	-1.89712	Data are lognormal at 5% significance level	
Maximum of log data	-0.616186	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-1.154991	95% H-UCL	0.422521
Standard Deviation of log data	0.403002	95% Chebyshev (MVUE) UCL	0.496937
Variance of log data	0.162411	97.5% Chebyshev (MVUE) UCL	0.564954
		99% Chebyshev (MVUE) UCL	0.698559
95% Non-parametric UCLs			
		CLT UCL	0.389995
		Adj-CLT UCL (Adjusted for skewness)	0.389314
		Mod-t UCL (Adjusted for skewness)	0.39357
		Jackknife UCL	0.393676
		Standard Bootstrap UCL	0.387941
		Bootstrap-t UCL	0.393769
RECOMMENDATION		Hall's Bootstrap UCL	0.389095
Data are normal (0.05)		Percentile Bootstrap UCL	0.387333
		BCA Bootstrap UCL	0.388667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.475788
		97.5% Chebyshev (Mean, Sd) UCL	0.535409
		99% Chebyshev (Mean, Sd) UCL	0.652523

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Cadmium
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.962973	
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	0.088	Data are normal at 5% significance level		
Maximum	0.46			
Mean	0.2992	95% UCL (Assuming Normal Distribution)		
Median	0.31	Student's-t UCL	0.346824	
Standard Deviation	0.104722			
Variance	0.010967	Gamma Distribution Test		
Coefficient of Variation	0.350007	A-D Test Statistic	0.420991	
Skewness	-0.258035	A-D 5% Critical Value	0.738093	
		K-S Test Statistic	0.148377	
		K-S 5% Critical Value	0.221855	
Gamma Statistics				
k hat	6.970973	Data follow gamma distribution		
k star (bias corrected)	5.621223	at 5% significance level		
Theta hat	0.042921			
Theta star	0.053227	95% UCLs (Assuming Gamma Distribution)		
nu hat	209.1292	Approximate Gamma UCL	0.361428	
nu star	168.6367	Adjusted Gamma UCL	0.370045	
Approx.Chi Square Value (.05)	139.6022			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	136.3512	Shapiro-Wilk Test Statistic	0.882475	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics				
Minimum of log data	-2.430418	Data are lognormal at 5% significance level		
Maximum of log data	-0.776529			
Mean of log data	-1.28008	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.430055	95% H-UCL	0.383611	
Variance of log data	0.184947	95% Chebyshev (MVUE) UCL	0.452886	
		97.5% Chebyshev (MVUE) UCL	0.517769	
		99% Chebyshev (MVUE) UCL	0.645219	
		95% Non-parametric UCLs		
		CLT UCL	0.343675	
		Adj-CLT UCL (Adjusted for skewness)	0.341751	
		Mod-t UCL (Adjusted for skewness)	0.346524	
		Jackknife UCL	0.346824	
		Standard Bootstrap UCL	0.342456	
		Bootstrap-t UCL	0.343359	
		Hall's Bootstrap UCL	0.343788	
RECOMMENDATION				
Data are normal (0.05)		Percentile Bootstrap UCL	0.34	
		BCA Bootstrap UCL	0.341333	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.417061	
		97.5% Chebyshev (Mean, Sd) UCL	0.46806	
		99% Chebyshev (Mean, Sd) UCL	0.568236	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Calcium
Raw Statistics		Normal Distribution Test		
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.915634	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	170	Data are normal at 5% significance level		
Maximum	1960			
Mean	1061.067	95% UCL (Assuming Normal Distribution)		
Median	1020	Student's-t UCL	1347.705	
Standard Deviation	630.296			
Variance	397273.1			
Coefficient of Variation	0.594021	Gamma Distribution Test		
Skewness	-0.024903	A-D Test Statistic	0.570161	
Gamma Statistics		A-D 5% Critical Value	0.746279	
k hat	2.24094	K-S Test Statistic	0.178843	
k star (bias corrected)	1.837196	K-S 5% Critical Value	0.2241	
Theta hat	473.4918	Data follow gamma distribution		
Theta star	577.5467	at 5% significance level		
nu hat	67.22819	95% UCLs (Assuming Gamma Distribution)		
nu star	55.11589	Approximate Gamma UCL	1497.504	
Approx.Chi Square Value (.05)	39.05274	Adjusted Gamma UCL	1564.032	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	37.39158	Shapiro-Wilk Test Statistic	0.888577	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881	
Minimum of log data	5.135798	Data are lognormal at 5% significance level		
Maximum of log data	7.5807	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.727619	95% H-UCL	1924.369	
Standard Deviation of log data	0.795667	95% Chebyshev (MVUE) UCL	2182.335	
Variance of log data	0.633086	97.5% Chebyshev (MVUE) UCL	2643.583	
		99% Chebyshev (MVUE) UCL	3549.614	
95% Non-parametric UCLs				
		CLT UCL	1328.753	
		Adj-CLT UCL (Adjusted for skewness)	1327.635	
		Mod-t UCL (Adjusted for skewness)	1347.531	
		Jackknife UCL	1347.705	
		Standard Bootstrap UCL	1312.434	
		Bootstrap-t UCL	1350.002	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	1304.758	
Use Student's-t UCL		Percentile Bootstrap UCL	1327.333	
		BCA Bootstrap UCL	1325.267	
		95% Chebyshev (Mean, Sd) UCL	1770.441	
		97.5% Chebyshev (Mean, Sd) UCL	2077.388	
		99% Chebyshev (Mean, Sd) UCL	2680.326	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Chromium
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.844291	
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	3.8	Data not normal at 5% significance level		
Maximum	8			
Mean	4.966667	95% UCL (Assuming Normal Distribution)		
Median	4.6	Student's-t UCL	5.506583	
Standard Deviation	1.187234			
Variance	1.409524	Gamma Distribution Test		
Coefficient of Variation	0.23904	A-D Test Statistic	0.706469	
Skewness	1.463377	A-D 5% Critical Value	0.734648	
Gamma Statistics				
k hat	21.67196	K-S Test Statistic	0.200981	
k star (bias corrected)	17.38202	K-S 5% Critical Value	0.221178	
Theta hat	0.229175	Data follow gamma distribution		
Theta star	0.285736	at 5% significance level		
nu hat	650.1589	95% UCLs (Assuming Gamma Distribution)		
nu star	521.4605	Approximate Gamma UCL	5.516438	
Approx.Chi Square Value (.05)	469.4914	Adjusted Gamma UCL	5.5887	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	463.4209	Shapiro-Wilk Test Statistic	0.896824	
Log-transformed Statistics				
Minimum of log data	1.335001	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	2.079442	Data are lognormal at 5% significance level		
Mean of log data	1.5795	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.216075	95% H-UCL	5.517575	
Variance of log data	0.046688	95% Chebyshev (MVUE) UCL	6.17255	
		97.5% Chebyshev (MVUE) UCL	6.697537	
		99% Chebyshev (MVUE) UCL	7.728772	
95% Non-parametric UCLs				
		CLT UCL	5.470884	
		Adj-CLT UCL (Adjusted for skewness)	5.594644	
		Mod-t UCL (Adjusted for skewness)	5.525887	
		Jackknife UCL	5.506583	
		Standard Bootstrap UCL	5.465986	
		Bootstrap-t UCL	5.791824	
		Hall's Bootstrap UCL	5.778016	
RECOMMENDATION	Data follow gamma distribution (0.05)	Percentile Bootstrap UCL	5.46	
		BCA Bootstrap UCL	5.606667	
	Use Approximate Gamma UCL	95% Chebyshev (Mean, Sd) UCL	6.302854	
		97.5% Chebyshev (Mean, Sd) UCL	6.881023	
		99% Chebyshev (Mean, Sd) UCL	8.016725	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Cobalt
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.904205
Number of Unique Samples	11	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.52	Data are normal at 5% significance level	
Maximum	1.6		
Mean	1.098667	95% UCL (Assuming Normal Distribution)	
Median	1.2	Student's-t UCL	1.267298
Standard Deviation	0.370807		
Variance	0.137498	Gamma Distribution Test	
Coefficient of Variation	0.337507	A-D Test Statistic	0.79643
Skewness	-0.430509	A-D 5% Critical Value	0.737874
		K-S Test Statistic	0.215315
Gamma Statistics		K-S 5% Critical Value	0.221748
k hat	7.911646	Data follow approximate gamma distribution	
k star (bias corrected)	6.373761	at 5% significance level	
Theta hat	0.138867		
Theta star	0.172373	95% UCLs (Assuming Gamma Distribution)	
nu hat	237.3494	Approximate Gamma UCL	1.311218
nu star	191.2128	Adjusted Gamma UCL	1.340432
Approx.Chi Square Value (.05)	160.2168		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	156.7249	Shapiro-Wilk Test Statistic	0.862161
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.653926		
Maximum of log data	0.470004	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.02957	95% H-UCL	1.364212
Standard Deviation of log data	0.390779	95% Chebyshev (MVUE) UCL	1.601272
Variance of log data	0.152708	97.5% Chebyshev (MVUE) UCL	1.815687
		99% Chebyshev (MVUE) UCL	2.236864
		95% Non-parametric UCLs	
		CLT UCL	1.256148
		Adj-CLT UCL (Adjusted for skewness)	1.244777
		Mod-t UCL (Adjusted for skewness)	1.265524
		Jackknife UCL	1.267298
		Standard Bootstrap UCL	1.249229
		Bootstrap-t UCL	1.255737
RECOMMENDATION		Hall's Bootstrap UCL	1.242212
Data are normal (0.05)		Percentile Bootstrap UCL	1.245333
		BCA Bootstrap UCL	1.241333
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.515997
		97.5% Chebyshev (Mean, Sd) UCL	1.696576
		99% Chebyshev (Mean, Sd) UCL	2.051288

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Copper
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.859031
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	1.7	Data not normal at 5% significance level	
Maximum	10.3		
Mean	6.96	95% UCL (Assuming Normal Distribution)	
Median	8.1	Student's-t UCL	8.290626
Standard Deviation	2.925943		
Variance	8.561143	Gamma Distribution Test	
Coefficient of Variation	0.420394	A-D Test Statistic	1.198232
Skewness	-0.646598	A-D 5% Critical Value	0.739513
		K-S Test Statistic	0.269335
		K-S 5% Critical Value	0.222386
Gamma Statistics			
k hat	4.349414	Data do not follow gamma distribution	
k star (bias corrected)	3.523976	at 5% significance level	
Theta hat	1.600215		
Theta star	1.975042	95% UCLs (Assuming Gamma Distribution)	
nu hat	130.4824	Approximate Gamma UCL	8.866531
nu star	105.7193	Adjusted Gamma UCL	9.139386
Approx.Chi Square Value (.05)	82.98693		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	80.50936	Shapiro-Wilk Test Statistic	0.812633
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics			
Minimum of log data	0.530628	Data not lognormal at 5% significance level	
Maximum of log data	2.332144		
Mean of log data	1.820839	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.557617	95% H-UCL	9.914179
Variance of log data	0.310936	95% Chebyshev (MVUE) UCL	11.77167
		97.5% Chebyshev (MVUE) UCL	13.77907
		99% Chebyshev (MVUE) UCL	17.72221
95% Non-parametric UCLs			
		CLT UCL	8.202646
		Adj-CLT UCL (Adjusted for skewness)	8.067877
		Mod-t UCL (Adjusted for skewness)	8.269605
		Jackknife UCL	8.290626
		Standard Bootstrap UCL	8.18032
		Bootstrap-t UCL	8.146999
		Hall's Bootstrap UCL	8.021346
RECOMMENDATION			
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	8.113333
		BCA Bootstrap UCL	8.06
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	10.25304
		97.5% Chebyshev (Mean, Sd) UCL	11.67794
		99% Chebyshev (Mean, Sd) UCL	14.47688

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Iron	1
Raw Statistics		Normal Distribution Test			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.92567		
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881		
Minimum	1610	Data are normal at 5% significance level			
Maximum	4440				
Mean	2851.333	95% UCL (Assuming Normal Distribution)			
Median	2970	Student's-t UCL	3219.189		
Standard Deviation	808.8869				
Variance	654298.1	Gamma Distribution Test			
Coefficient of Variation	0.283687	A-D Test Statistic	0.687563		
Skewness	-0.00457	A-D 5% Critical Value	0.73673		
Gamma Statistics		K-S Test Statistic	0.193929		
k hat	12.4191	K-S 5% Critical Value	0.221433		
k star (bias corrected)	9.979721	Data follow gamma distribution			
Theta hat	229.5927	at 5% significance level			
Theta star	285.7127	95% UCLs (Assuming Gamma Distribution)			
nu hat	372.5729	Approximate Gamma UCL	3279.51		
nu star	299.3916	Adjusted Gamma UCL	3337.027		
Approx.Chi Square Value (.05)	260.3027				
Adjusted Level of Significance	0.03235	Lognormal Distribution Test			
Adjusted Chi Square Value	255.8162	Shapiro-Wilk Test Statistic	0.906623		
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881		
Minimum of log data	7.383989	Data are lognormal at 5% significance level			
Maximum of log data	8.39841	95% UCLs (Assuming Lognormal Distribution)			
Mean of log data	7.914741	95% H-UCL	3337.759		
Standard Deviation of log data	0.302783	95% Chebyshev (MVUE) UCL	3841.456		
Variance of log data	0.091677	97.5% Chebyshev (MVUE) UCL	4267.575		
		99% Chebyshev (MVUE) UCL	5104.603		
95% Non-parametric UCLs					
		CLT UCL	3194.867		
		Adj-CLT UCL (Adjusted for skewness)	3194.604		
		Mod-t UCL (Adjusted for skewness)	3219.148		
		Jackknife UCL	3219.189		
		Standard Bootstrap UCL	3181.673		
		Bootstrap-t UCL	3217.338		
		Hall's Bootstrap UCL	3195.746		
		Percentile Bootstrap UCL	3183.333		
		BCA Bootstrap UCL	3176		
RECOMMENDATION		95% Chebyshev (Mean, Sd) UCL	3761.706		
Data are normal (0.05)		97.5% Chebyshev (Mean, Sd) UCL	4155.624		
Use Student's-t UCL		99% Chebyshev (Mean, Sd) UCL	4929.402		

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Lead
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.929997	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	13.2	Data are normal at 5% significance level		
Maximum	60.7			
Mean	33.06	95% UCL (Assuming Normal Distribution)		
Median	29.8	Student's-t UCL	38.78437	
Standard Deviation	12.58745			
Variance	158.444	Gamma Distribution Test		
Coefficient of Variation	0.380746	A-D Test Statistic	0.305156	
Skewness	0.857623	A-D 5% Critical Value	0.73796	
Gamma Statistics				
k hat	7.543146	K-S Test Statistic	0.134735	
k star (bias corrected)	6.078961	K-S 5% Critical Value	0.22179	
Theta hat	4.382787	Data follow gamma distribution		
Theta star	5.438429	at 5% significance level		
nu hat	226.2944	95% UCLs (Assuming Gamma Distribution)		
nu star	182.3688	Approximate Gamma UCL	39.63221	
Approx.Chi Square Value (.05)	152.1266	Adjusted Gamma UCL	40.53805	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	148.7273	Shapiro-Wilk Test Statistic	0.962527	
Log-transformed Statistics				
Minimum of log data	2.580217	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	4.105944	Data are lognormal at 5% significance level		
Mean of log data	3.430577	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.387689	95% H-UCL	40.79141	
Variance of log data	0.150303	95% Chebyshev (MVUE) UCL	47.85414	
		97.5% Chebyshev (MVUE) UCL	54.22565	
		99% Chebyshev (MVUE) UCL	66.74125	
95% Non-parametric UCLs				
		CLT UCL	38.40588	
		Adj-CLT UCL (Adjusted for skewness)	39.17488	
		Mod-t UCL (Adjusted for skewness)	38.90432	
		Jackknife UCL	38.78437	
		Standard Bootstrap UCL	38.23808	
		Bootstrap-t UCL	40.09875	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	42.25252	
		Percentile Bootstrap UCL	38.26667	
		BCA Bootstrap UCL	39.31333	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	47.22671	
		97.5% Chebyshev (Mean, Sd) UCL	53.35666	
		99% Chebyshev (Mean, Sd) UCL	65.39776	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Magnesium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.906899
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	110	Data are normal at 5% significance level	
Maximum	429		
Mean	244	95% UCL (Assuming Normal Distribution)	
Median	241	Student's-t UCL	291.0924
Standard Deviation	103.5526		
Variance	10723.14	Gamma Distribution Test	
Coefficient of Variation	0.424396	A-D Test Statistic	0.635001
Skewness	0.351739	A-D 5% Critical Value	0.738355
Gamma Statistics		K-S Test Statistic	0.206828
k hat	5.838851	K-S 5% Critical Value	0.221984
k star (bias corrected)	4.715525	Data follow gamma distribution	
Theta hat	41.78904	at 5% significance level	
Theta star	51.74397	95% UCLs (Assuming Gamma Distribution)	
nu hat	175.1655	Approximate Gamma UCL	300.2163
nu star	141.4658	Adjusted Gamma UCL	308.0905
Approx.Chi Square Value (.05)	114.9759		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	112.0374	Shapiro-Wilk Test Statistic	0.915418
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	4.70048	Data are lognormal at 5% significance level	
Maximum of log data	6.061457	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.409098	95% H-UCL	311.5845
Standard Deviation of log data	0.439853	95% Chebyshev (MVUE) UCL	368.2759
Variance of log data	0.193471	97.5% Chebyshev (MVUE) UCL	421.8691
		99% Chebyshev (MVUE) UCL	527.1427
95% Non-parametric UCLs			
		CLT UCL	287.9787
		Adj-CLT UCL (Adjusted for skewness)	290.5733
		Mod-t UCL (Adjusted for skewness)	291.4971
		Jackknife UCL	291.0924
		Standard Bootstrap UCL	287.0002
		Bootstrap-t UCL	295.1613
RECOMMENDATION		Hall's Bootstrap UCL	286.5027
Data are normal (0.05)		Percentile Bootstrap UCL	286.7333
		BCA Bootstrap UCL	289.2667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	360.5446
		97.5% Chebyshev (Mean, Sd) UCL	410.9736
		99% Chebyshev (Mean, Sd) UCL	510.0315

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Manganese
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.89403
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	7.9	Data are normal at 5% significance level	
Maximum	38		
Mean	18.64667	95% UCL (Assuming Normal Distribution)	
Median	18.2	Student's-t UCL	21.8919
Standard Deviation	7.136012		
Variance	50.92267	Gamma Distribution Test	
Coefficient of Variation	0.382696	A-D Test Statistic	0.349473
Skewness	1.380597	A-D 5% Critical Value	0.737831
		K-S Test Statistic	0.132452
		K-S 5% Critical Value	0.221727
Gamma Statistics			
k hat	8.098104	Data follow gamma distribution	
k star (bias corrected)	6.522928	at 5% significance level	
Theta hat	2.302597		
Theta star	2.858635	95% UCLs (Assuming Gamma Distribution)	
nu hat	242.9431	Approximate Gamma UCL	22.20661
nu star	195.6878	Adjusted Gamma UCL	22.69527
Approx.Chi Square Value (.05)	164.3171		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	160.7791	Shapiro-Wilk Test Statistic	0.966612
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics			
Minimum of log data	2.066863	Data are lognormal at 5% significance level	
Maximum of log data	3.637586		
Mean of log data	2.862656	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.367278	95% H-UCL	22.65491
Variance of log data	0.134893	95% Chebyshev (MVUE) UCL	26.47608
		97.5% Chebyshev (MVUE) UCL	29.86636
		99% Chebyshev (MVUE) UCL	36.52589
95% Non-parametric UCLs			
		CLT UCL	21.67733
		Adj-CLT UCL (Adjusted for skewness)	22.37912
		Mod-t UCL (Adjusted for skewness)	22.00136
		Jackknife UCL	21.8919
		Standard Bootstrap UCL	21.50139
		Bootstrap-t UCL	23.16302
RECOMMENDATION		Hall's Bootstrap UCL	25.97414
Data are normal (0.05)		Percentile Bootstrap UCL	21.61333
		BCA Bootstrap UCL	22.60667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	26.67798
		97.5% Chebyshev (Mean, Sd) UCL	30.15314
		99% Chebyshev (Mean, Sd) UCL	36.97941

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Molybder
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.822499
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.095	Data not normal at 5% significance level	
Maximum	1		
Mean	0.659333	95% UCL (Assuming Normal Distribution)	
Median	0.82	Student's-t UCL	0.8088
Standard Deviation	0.328665		
Variance	0.108021	Gamma Distribution Test	
Coefficient of Variation	0.498481	A-D Test Statistic	1.566415
Skewness	-0.796917	A-D 5% Critical Value	0.74559
Gamma Statistics		K-S Test Statistic	0.304129
k hat	2.536299	K-S 5% Critical Value	0.223781
k star (bias corrected)	2.073484	Data do not follow gamma distribution	
Theta hat	0.259959	at 5% significance level	
Theta star	0.317983	95% UCLs (Assuming Gamma Distribution)	
nu hat	76.08898	Approximate Gamma UCL	0.910196
nu star	62.20451	Adjusted Gamma UCL	0.947921
Approx.Chi Square Value (.05)	45.06006		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	43.26679	Shapiro-Wilk Test Statistic	0.760794
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	-2.353878	Data not lognormal at 5% significance level	
Maximum of log data	0	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	-0.62643	95% H-UCL	1.201578
Standard Deviation of log data	0.781454	95% Chebyshev (MVUE) UCL	1.369426
Variance of log data	0.61067	97.5% Chebyshev (MVUE) UCL	1.655935
		99% Chebyshev (MVUE) UCL	2.218726
95% Non-parametric UCLs			
		CLT UCL	0.798917
		Adj-CLT UCL (Adjusted for skewness)	0.78026
		Mod-t UCL (Adjusted for skewness)	0.80589
		Jackknife UCL	0.8088
		Standard Bootstrap UCL	0.796399
		Bootstrap-t UCL	0.799739
RECOMMENDATION		Hall's Bootstrap UCL	0.776769
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	0.789
		BCA Bootstrap UCL	0.777333
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	1.029234
		97.5% Chebyshev (Mean, Sd) UCL	1.18929
		99% Chebyshev (Mean, Sd) UCL	1.50369
Recommended UCL exceeds the maximum observation			

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Nickel
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.922171
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	2.6	Data are normal at 5% significance level	
Maximum	5.7		
Mean	4.273333	95% UCL (Assuming Normal Distribution)	
Median	4.5	Student's-t UCL	4.747648
Standard Deviation	1.042981		
Variance	1.08781	Gamma Distribution Test	
Coefficient of Variation	0.244067	A-D Test Statistic	0.605885
Skewness	-0.422152	A-D 5% Critical Value	0.735716
Gamma Statistics		K-S Test Statistic	0.179576
k hat	16.13364	K-S 5% Critical Value	0.221314
k star (bias corrected)	12.95135	Data follow gamma distribution	
Theta hat	0.264871	at 5% significance level	
Theta star	0.329953	95% UCLs (Assuming Gamma Distribution)	
nu hat	484.0091	Approximate Gamma UCL	4.828827
nu star	388.5406	Adjusted Gamma UCL	4.902629
Approx.Chi Square Value (.05)	343.844		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	338.668	Shapiro-Wilk Test Statistic	0.885594
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	0.955511	Data are lognormal at 5% significance level	
Maximum of log data	1.740466	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	1.421083	95% H-UCL	4.900824
Standard Deviation of log data	0.267245	95% Chebyshev (MVUE) UCL	5.581243
Variance of log data	0.07142	97.5% Chebyshev (MVUE) UCL	6.143569
		99% Chebyshev (MVUE) UCL	7.24815
95% Non-parametric UCLs			
		CLT UCL	4.716287
		Adj-CLT UCL (Adjusted for skewness)	4.684923
		Mod-t UCL (Adjusted for skewness)	4.742756
		Jackknife UCL	4.747648
		Standard Bootstrap UCL	4.71001
		Bootstrap-t UCL	4.750334
RECOMMENDATION		Hall's Bootstrap UCL	4.687065
Data are normal (0.05)		Percentile Bootstrap UCL	4.713333
		BCA Bootstrap UCL	4.66
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	5.44717
		97.5% Chebyshev (Mean, Sd) UCL	5.95509
		99% Chebyshev (Mean, Sd) UCL	6.9528

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Potassium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.903137
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	144	Data are normal at 5% significance level	
Maximum	378		
Mean	236.0667	95% UCL (Assuming Normal Distribution)	
Median	230	Student's-t UCL	261.2141
Standard Deviation	55.29721		
Variance	3057.781	Gamma Distribution Test	
Coefficient of Variation	0.234244	A-D Test Statistic	0.543364
Skewness	1.005794	A-D 5% Critical Value	0.734656
		K-S Test Statistic	0.207811
Gamma Statistics		K-S 5% Critical Value	0.221186
k hat	20.57432	Data follow gamma distribution	
k star (bias corrected)	16.5039	at 5% significance level	
Theta hat	11.47385		
Theta star	14.30369	95% UCLs (Assuming Gamma Distribution)	
nu hat	617.2297	Approximate Gamma UCL	262.9438
nu star	495.1171	Adjusted Gamma UCL	266.4828
Approx.Chi Square Value (.05)	444.5081		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	438.6049	Shapiro-Wilk Test Statistic	0.939702
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	4.969813		
Maximum of log data	5.934894	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	5.439615	95% H-UCL	264.3937
Standard Deviation of log data	0.228571	95% Chebyshev (MVUE) UCL	297.1566
Variance of log data	0.052245	97.5% Chebyshev (MVUE) UCL	323.6062
		99% Chebyshev (MVUE) UCL	375.5611
		95% Non-parametric UCLs	
		CLT UCL	259.5514
		Adj-CLT UCL (Adjusted for skewness)	263.5132
		Mod-t UCL (Adjusted for skewness)	261.8321
		Jackknife UCL	261.2141
		Standard Bootstrap UCL	258.701
		Bootstrap-t UCL	267.4549
RECOMMENDATION		Hall's Bootstrap UCL	287.7129
Data are normal (0.05)		Percentile Bootstrap UCL	259.2
		BCA Bootstrap UCL	261.8
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	298.3016
		97.5% Chebyshev (Mean, Sd) UCL	325.2307
		99% Chebyshev (Mean, Sd) UCL	378.1278

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Selenium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.861985
Number of Unique Samples	9	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.4	Data not normal at 5% significance level	
Maximum	2.1		
Mean	1.491333	95% UCL (Assuming Normal Distribution)	
Median	1.7	Student's-t UCL	1.722512
Standard Deviation	0.508343		
Variance	0.258412	Gamma Distribution Test	
Coefficient of Variation	0.340865	A-D Test Statistic	1.294896
Skewness	-0.98046	A-D 5% Critical Value	0.738241
		K-S Test Statistic	0.346905
Gamma Statistics		K-S 5% Critical Value	0.221928
k hat	6.332031	Data do not follow gamma distribution	
k star (bias corrected)	5.110069	at 5% significance level	
Theta hat	0.235522		
Theta star	0.291842	95% UCLs (Assuming Gamma Distribution)	
nu hat	189.9609	Approximate Gamma UCL	1.819158
nu star	153.3021	Adjusted Gamma UCL	1.864831
Approx. Chi Square Value (.05)	125.676		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	122.598	Shapiro-Wilk Test Statistic	0.775653
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data not lognormal at 5% significance level	
Minimum of log data	-0.916291		
Maximum of log data	0.741937	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.318634	95% H-UCL	1.973988
Standard Deviation of log data	0.465752	95% Chebyshev (MVUE) UCL	2.338933
Variance of log data	0.216925	97.5% Chebyshev (MVUE) UCL	2.692941
		99% Chebyshev (MVUE) UCL	3.388322
95% Non-parametric UCLs			
		CLT UCL	1.707226
		Adj-CLT UCL (Adjusted for skewness)	1.671722
		Mod-t UCL (Adjusted for skewness)	1.716974
		Jackknife UCL	1.722512
		Standard Bootstrap UCL	1.698612
		Bootstrap-t UCL	1.699863
RECOMMENDATION		Hall's Bootstrap UCL	1.671375
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	1.691333
		BCA Bootstrap UCL	1.673333
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.063454
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	2.311011
		99% Chebyshev (Mean, Sd) UCL	2.79729

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Silver
Raw Statistics				
Number of Valid Samples	15	Normal Distribution Test		
Number of Unique Samples	12	Shapiro-Wilk Test Statistic	0.951042	
Minimum	0.013	Shapiro-Wilk 5% Critical Value	0.881	
Maximum	0.14	Data are normal at 5% significance level		
Mean	0.089267	95% UCL (Assuming Normal Distribution)		
Median	0.088	Student's-t UCL	0.103902	
Standard Deviation	0.032181			
Variance	0.001036	Gamma Distribution Test		
Coefficient of Variation	0.360508	A-D Test Statistic	0.89503	
Skewness	-0.75838	A-D 5% Critical Value	0.738771	
		K-S Test Statistic	0.245528	
Gamma Statistics		K-S 5% Critical Value	0.22215	
k hat	4.850454	Data do not follow gamma distribution		
k star (bias corrected)	3.924807	at 5% significance level		
Theta hat	0.018404			
Theta star	0.022744	95% UCLs (Assuming Gamma Distribution)		
nu hat	145.5136	Approximate Gamma UCL	0.112191	
nu star	117.7442	Adjusted Gamma UCL	0.115444	
Approx.Chi Square Value (.05)	93.68526			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	91.045	Shapiro-Wilk Test Statistic	0.729377	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	-4.342806			
Maximum of log data	-1.966113	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-2.522738	95% H-UCL	0.131542	
Standard Deviation of log data	0.573763	95% Chebyshev (MVUE) UCL	0.156073	
Variance of log data	0.329204	97.5% Chebyshev (MVUE) UCL	0.183179	
		99% Chebyshev (MVUE) UCL	0.236423	
		95% Non-parametric UCLs		
		CLT UCL	0.102934	
		Adj-CLT UCL (Adjusted for skewness)	0.101196	
		Mod-t UCL (Adjusted for skewness)	0.103631	
		Jackknife UCL	0.103902	
		Standard Bootstrap UCL	0.102393	
		Bootstrap-t UCL	0.102392	
		Hall's Bootstrap UCL	0.102083	
RECOMMENDATION		Percentile Bootstrap UCL	0.1018	
Data are normal (0.05)		BCA Bootstrap UCL	0.1014	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.125486	
		97.5% Chebyshev (Mean, Sd) UCL	0.141158	
		99% Chebyshev (Mean, Sd) UCL	0.171942	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Sodium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.90435
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	59.9	Data are normal at 5% significance level	
Maximum	389		
Mean	221.3067	95% UCL (Assuming Normal Distribution)	
Median	235	Student's-t UCL	271.2637
Standard Deviation	109.8515		
Variance	12067.36	Gamma Distribution Test	
Coefficient of Variation	0.496377	A-D Test Statistic	0.891814
Skewness	-0.260853	A-D 5% Critical Value	0.743104
Gamma Statistics		K-S Test Statistic	0.212373
k hat	3.313738	K-S 5% Critical Value	0.223051
k star (bias corrected)	2.695435	Data follow approximate gamma distribution at 5% significance level	
Theta hat	66.78459		
Theta star	82.10424	95% UCLs (Assuming Gamma Distribution)	
nu hat	99.41215	Approximate Gamma UCL	292.7046
nu star	80.86306	Adjusted Gamma UCL	303.1622
Approx.Chi Square Value (.05)	61.13854		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	59.02957	Shapiro-Wilk Test Statistic	0.855719
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	4.092677	Data not lognormal at 5% significance level	
Maximum of log data	5.963579		
Mean of log data	5.24114	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.632367	95% H-UCL	335.7292
Variance of log data	0.399888	95% Chebyshev (MVUE) UCL	396.1636
		97.5% Chebyshev (MVUE) UCL	469.2934
		99% Chebyshev (MVUE) UCL	612.9428
95% Non-parametric UCLs			
		CLT UCL	267.9605
		Adj-CLT UCL (Adjusted for skewness)	265.9193
		Mod-t UCL (Adjusted for skewness)	270.9453
		Jackknife UCL	271.2637
		Standard Bootstrap UCL	266.8733
		Bootstrap-t UCL	268.3463
RECOMMENDATION		Hall's Bootstrap UCL	265.2041
Data are normal (0.05)		Percentile Bootstrap UCL	266.2533
		BCA Bootstrap UCL	262.98
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	344.9405
		97.5% Chebyshev (Mean, Sd) UCL	398.437
		99% Chebyshev (Mean, Sd) UCL	503.5204

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Thallium
Raw Statistics				
Number of Valid Samples	15	Normal Distribution Test	Shapiro-Wilk Test Statistic	0.916848
Number of Unique Samples	11		Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.036		Data are normal at 5% significance level	
Maximum	0.075			
Mean	0.0496		95% UCL (Assuming Normal Distribution)	
Median	0.048		Student's-t UCL	0.054548
Standard Deviation	0.010881			
Variance	0.000118	Gamma Distribution Test		
Coefficient of Variation	0.219379	A-D Test Statistic	0.354745	
Skewness	0.974816	A-D 5% Critical Value	0.734632	
Gamma Statistics		K-S Test Statistic	0.181679	
k hat	23.9728	K-S 5% Critical Value	0.221161	
k star (bias corrected)	19.22269	Data follow gamma distribution		
Theta hat	0.002069	at 5% significance level		
Theta star	0.00258	95% UCLs (Assuming Gamma Distribution)		
nu hat	719.1841	Approximate Gamma UCL	0.054799	
nu star	576.6806	Adjusted Gamma UCL	0.05548	
Approx.Chi Square Value (.05)	521.968			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	515.56	Shapiro-Wilk Test Statistic	0.952758	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881	
Minimum of log data	-3.324236	Data are lognormal at 5% significance level		
Maximum of log data	-2.590267	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	-3.024766	95% H-UCL	0.05495	
Standard Deviation of log data	0.209281	95% Chebyshev (MVUE) UCL	0.061313	
Variance of log data	0.043799	97.5% Chebyshev (MVUE) UCL	0.066393	
		99% Chebyshev (MVUE) UCL	0.076373	
95% Non-parametric UCLs				
		CLT UCL	0.054221	
		Adj-CLT UCL (Adjusted for skewness)	0.054977	
		Mod-t UCL (Adjusted for skewness)	0.054666	
		Jackknife UCL	0.054548	
		Standard Bootstrap UCL	0.054173	
		Bootstrap-t UCL	0.055714	
RECOMMENDATION		Hall's Bootstrap UCL	0.056756	
Data are normal (0.05)		Percentile Bootstrap UCL	0.0544	
		BCA Bootstrap UCL	0.054733	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.061846	
		97.5% Chebyshev (Mean, Sd) UCL	0.067145	
		99% Chebyshev (Mean, Sd) UCL	0.077554	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Thorium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.931381
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.39	Data are normal at 5% significance level	
Maximum	2.8		
Mean	1.307333	95% UCL (Assuming Normal Distribution)	
Median	1.4	Student's-t UCL	1.625232
Standard Deviation	0.699035		
Variance	0.48865	Gamma Distribution Test	
Coefficient of Variation	0.534703	A-D Test Statistic	0.442637
Skewness	0.464304	A-D 5% Critical Value	0.742604
Gamma Statistics		K-S Test Statistic	0.155629
k hat	3.425348	K-S 5% Critical Value	0.222969
k star (bias corrected)	2.784723	Data follow gamma distribution	
Theta hat	0.381664	at 5% significance level	
Theta star	0.469466	95% UCLs (Assuming Gamma Distribution)	
nu hat	102.7604	Approximate Gamma UCL	1.720695
nu star	83.54169	Adjusted Gamma UCL	1.781058
Approx.Chi Square Value (.05)	63.47252		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	61.32134	Shapiro-Wilk Test Statistic	0.934309
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	-0.941609	Data are lognormal at 5% significance level	
Maximum of log data	1.029619	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.114975	95% H-UCL	1.902617
Standard Deviation of log data	0.598921	95% Chebyshev (MVUE) UCL	2.253345
Variance of log data	0.358706	97.5% Chebyshev (MVUE) UCL	2.655471
		99% Chebyshev (MVUE) UCL	3.44537
95% Non-parametric UCLs			
		CLT UCL	1.604213
		Adj-CLT UCL (Adjusted for skewness)	1.627333
		Mod-t UCL (Adjusted for skewness)	1.628838
		Jackknife UCL	1.625232
		Standard Bootstrap UCL	1.60172
		Bootstrap-t UCL	1.644101
		Hall's Bootstrap UCL	1.639566
RECOMMENDATION		Percentile Bootstrap UCL	1.602
Data are normal (0.05)		BCA Bootstrap UCL	1.612
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	2.094071
		97.5% Chebyshev (Mean, Sd) UCL	2.434493
		99% Chebyshev (Mean, Sd) UCL	3.103186

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Titanium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.868697
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	65.7	Data not normal at 5% significance level	
Maximum	157		
Mean	99.16	95% UCL (Assuming Normal Distribution)	
Median	90.3	Student's-t UCL	113.6411
Standard Deviation	31.84278		
Variance	1013.963	Gamma Distribution Test	
Coefficient of Variation	0.321125	A-D Test Statistic	0.59789
Skewness	0.830642	A-D 5% Critical Value	0.73702
Gamma Statistics		K-S Test Statistic	0.170323
k hat	11.3552	K-S 5% Critical Value	0.221467
k star (bias corrected)	9.128602	Data follow gamma distribution at 5% significance level	
Theta hat	8.732565		
Theta star	10.86256	95% UCLs (Assuming Gamma Distribution)	
nu hat	340.6559	Approximate Gamma UCL	114.8111
nu star	273.8581	Adjusted Gamma UCL	116.9223
Approx.Chi Square Value (.05)	236.5255		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	232.2549	Shapiro-Wilk Test Statistic	0.907438
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	4.185099	Data are lognormal at 5% significance level	
Maximum of log data	5.056246	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.552056	95% H-UCL	115.7458
Standard Deviation of log data	0.30396	95% Chebyshev (MVUE) UCL	133.2559
Variance of log data	0.092392	97.5% Chebyshev (MVUE) UCL	148.0812
		99% Chebyshev (MVUE) UCL	177.2025
		95% Non-parametric UCLs	
		CLT UCL	112.6836
		Adj-CLT UCL (Adjusted for skewness)	114.5678
		Mod-t UCL (Adjusted for skewness)	113.935
		Jackknife UCL	113.6411
		Standard Bootstrap UCL	112.317
		Bootstrap-t UCL	116.7961
		Hall's Bootstrap UCL	113.7429
RECOMMENDATION	Data follow gamma distribution (0.05)	Percentile Bootstrap UCL	112.24
		BCA Bootstrap UCL	113.5467
	Use Approximate Gamma UCL	95% Chebyshev (Mean, Sd) UCL	134.9979
		97.5% Chebyshev (Mean, Sd) UCL	150.5049
		99% Chebyshev (Mean, Sd) UCL	180.9656

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 3050B/6020	Tungsten
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.896948	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	0.043	Data are normal at 5% significance level		
Maximum	1.3			
Mean	0.486533	95% UCL (Assuming Normal Distribution)		
Median	0.42	Student's-t UCL	0.642943	
Standard Deviation	0.343932			
Variance	0.11829	Gamma Distribution Test		
Coefficient of Variation	0.706904	A-D Test Statistic	0.311309	
Skewness	1.164807	A-D 5% Critical Value	0.748479	
Gamma Statistics				
k hat	1.882116	K-S Test Statistic	0.162118	
k star (bias corrected)	1.550137	K-S 5% Critical Value	0.224631	
Theta hat	0.258503	Data follow gamma distribution		
Theta star	0.313865	at 5% significance level		
nu hat	56.46349	95% UCLs (Assuming Gamma Distribution)		
nu star	46.50412	Approximate Gamma UCL	0.7103	
Approx.Chi Square Value (.05)	31.85388	Adjusted Gamma UCL	0.745124	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	30.36514	Shapiro-Wilk Test Statistic	0.919106	
Log-transformed Statistics				
Minimum of log data	-3.146555	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	0.262364	Data are lognormal at 5% significance level		
Mean of log data	-1.00904	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.889839	95% H-UCL	0.998957	
Variance of log data	0.791814	95% Chebyshev (MVUE) UCL	1.088537	
		97.5% Chebyshev (MVUE) UCL	1.33312	
		99% Chebyshev (MVUE) UCL	1.813558	
95% Non-parametric UCLs				
		CLT UCL	0.632601	
		Adj-CLT UCL (Adjusted for skewness)	0.661139	
		Mod-t UCL (Adjusted for skewness)	0.647394	
		Jackknife UCL	0.642943	
		Standard Bootstrap UCL	0.62645	
		Bootstrap-t UCL	0.706388	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	0.823979	
Use Student's-t UCL		Percentile Bootstrap UCL	0.624867	
		BCA Bootstrap UCL	0.656	
		95% Chebyshev (Mean, Sd) UCL	0.873617	
		97.5% Chebyshev (Mean, Sd) UCL	1.041108	
		99% Chebyshev (Mean, Sd) UCL	1.370112	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Uranium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.874523
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881
Minimum	0.7	Data not normal at 5% significance level	
Maximum	2.2		
Mean	1.142667	95% UCL (Assuming Normal Distribution)	
Median	1.1	Student's-t UCL	1.323396
Standard Deviation	0.397411		
Variance	0.157935	Gamma Distribution Test	
Coefficient of Variation	0.347792	A-D Test Statistic	0.341668
Skewness	1.483674	A-D 5% Critical Value	0.737273
Gamma Statistics		K-S Test Statistic	0.129831
k hat	10.4274	K-S 5% Critical Value	0.221496
K star (bias corrected)	8.386368	Data follow gamma distribution	
Theta hat	0.109583	at 5% significance level	
Theta star	0.136253	95% UCLs (Assuming Gamma Distribution)	
nu hat	312.8221	Approximate Gamma UCL	1.331821
nu star	251.591	Adjusted Gamma UCL	1.35744
Approx.Chi Square Value (.05)	215.8584	Lognormal Distribution Test	
Adjusted Level of Significance	0.03235	Shapiro-Wilk Test Statistic	0.956732
Adjusted Chi Square Value	211.7844	Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	-0.356675		
Maximum of log data	0.788457	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.084648	95% H-UCL	1.340004
Standard Deviation of log data	0.313825	95% Chebyshev (MVUE) UCL	1.546811
Variance of log data	0.098486	97.5% Chebyshev (MVUE) UCL	1.72311
		99% Chebyshev (MVUE) UCL	2.069416
95% Non-parametric UCLs			
		CLT UCL	1.311447
		Adj-CLT UCL (Adjusted for skewness)	1.353448
		Mod-t UCL (Adjusted for skewness)	1.329948
		Jackknife UCL	1.323396
		Standard Bootstrap UCL	1.308938
		Bootstrap-t UCL	1.413683
RECOMMENDATION		Hall's Bootstrap UCL	1.614464
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	1.314667
		BCA Bootstrap UCL	1.362667
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	1.589938
		97.5% Chebyshev (Mean, Sd) UCL	1.783472
		99% Chebyshev (Mean, Sd) UCL	2.163633

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Vanadium
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.975147
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	4.5	Data are normal at 5% significance level	
Maximum	12.1		
Mean	8.573333	95% UCL (Assuming Normal Distribution)	
Median	8.8	Student's-t UCL	9.59276
Standard Deviation	2.241641		
Variance	5.024952	Gamma Distribution Test	
Coefficient of Variation	0.261467	A-D Test Statistic	0.251221
Skewness	-0.185509	A-D 5% Critical Value	0.736226
Gamma Statistics		K-S Test Statistic	0.122357
k hat	14.26341	K-S 5% Critical Value	0.221374
k star (bias corrected)	11.45517	Data follow gamma distribution	
Theta hat	0.601072	at 5% significance level	
Theta star	0.748425	95% UCLs (Assuming Gamma Distribution)	
nu hat	427.9022	Approximate Gamma UCL	9.765864
nu star	343.6551	Adjusted Gamma UCL	9.925094
Approx.Chi Square Value (.05)	301.6906		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	296.8506	Shapiro-Wilk Test Statistic	0.948161
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	1.504077	Data are lognormal at 5% significance level	
Maximum of log data	2.493205	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.113192	95% H-UCL	9.93106
Standard Deviation of log data	0.284299	95% Chebyshev (MVUE) UCL	11.36936
Variance of log data	0.080826	97.5% Chebyshev (MVUE) UCL	12.57116
		99% Chebyshev (MVUE) UCL	14.93186
95% Non-parametric UCLs			
		CLT UCL	9.525357
		Adj-CLT UCL (Adjusted for skewness)	9.495734
		Mod-t UCL (Adjusted for skewness)	9.58814
		Jackknife UCL	9.59276
		Standard Bootstrap UCL	9.496723
		Bootstrap-t UCL	9.554356
RECOMMENDATION		Hall's Bootstrap UCL	9.449846
Data are normal (0.05)		Percentile Bootstrap UCL	9.46
		BCA Bootstrap UCL	9.493333
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	11.09622
		97.5% Chebyshev (Mean, Sd) UCL	12.18787
		99% Chebyshev (Mean, Sd) UCL	14.33221

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Zinc
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.928546
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881
Minimum	6.8	Data are normal at 5% significance level	
Maximum	29.3		
Mean	18.67333	95% UCL (Assuming Normal Distribution)	
Median	18.8	Student's-t UCL	22.01251
Standard Deviation	7.342583		
Variance	53.91352	Gamma Distribution Test	
Coefficient of Variation	0.393212	A-D Test Statistic	0.405211
Skewness	0.088751	A-D 5% Critical Value	0.738272
Gamma Statistics		K-S Test Statistic	0.149596
k hat	6.196533	K-S 5% Critical Value	0.221944
k star (bias corrected)	5.001671	Data follow gamma distribution	
Theta hat	3.013513	at 5% significance level	
Theta star	3.733419	95% UCLs (Assuming Gamma Distribution)	
nu hat	185.896	Approximate Gamma UCL	22.82976
nu star	150.0501	Adjusted Gamma UCL	23.40966
Approx.Chi Square Value (.05)	122.7317		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	119.6914	Shapiro-Wilk Test Statistic	0.926693
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	1.916923	Data are lognormal at 5% significance level	
Maximum of log data	3.377588	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	2.844241	95% H-UCL	23.97081
Standard Deviation of log data	0.439874	95% Chebyshev (MVUE) UCL	28.33226
Variance of log data	0.193489	97.5% Chebyshev (MVUE) UCL	32.45544
		99% Chebyshev (MVUE) UCL	40.55462
95% Non-parametric UCLs			
		CLT UCL	21.79172
		Adj-CLT UCL (Adjusted for skewness)	21.83814
		Mod-t UCL (Adjusted for skewness)	22.01975
		Jackknife UCL	22.01251
		Standard Bootstrap UCL	21.6887
		Bootstrap-t UCL	22.02415
RECOMMENDATION		Hall's Bootstrap UCL	21.75787
Data are normal (0.05)		Percentile Bootstrap UCL	21.76667
		BCA Bootstrap UCL	21.74
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	26.93714
		97.5% Chebyshev (Mean, Sd) UCL	30.51289
		99% Chebyshev (Mean, Sd) UCL	37.53677

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 3050B/6020	Zirconium
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.898792
Number of Unique Samples	6	Shapiro-Wilk 5% Critical Value	0.881
Minimum	1	Data are normal at 5% significance level	
Maximum	1.6		
Mean	1.266667	95% UCL (Assuming Normal Distribution)	
Median	1.2	Student's-t UCL	1.348501
Standard Deviation	0.179947		
Variance	0.032381	Gamma Distribution Test	
Coefficient of Variation	0.142063	A-D Test Statistic	0.591485
Skewness	0.748083	A-D 5% Critical Value	0.73441
		K-S Test Statistic	0.205576
		K-S 5% Critical Value	0.220966
Gamma Statistics		Data follow gamma distribution	
k hat	55.44105		
k star (bias corrected)	44.39729	at 5% significance level	
Theta hat	0.022847		
Theta star	0.02853	95% UCLs (Assuming Gamma Distribution)	
nu hat	1663.232	Approximate Gamma UCL	1.351669
nu star	1331.919	Adjusted Gamma UCL	1.362566
Approx.Chi Square Value (.05)	1248.158		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	1238.176	Shapiro-Wilk Test Statistic	0.923243
		Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	0		
Maximum of log data	0.470004	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	0.227343	95% H-UCL	1.352745
Standard Deviation of log data	0.137968	95% Chebyshev (MVUE) UCL	1.463595
Variance of log data	0.019035	97.5% Chebyshev (MVUE) UCL	1.548897
		99% Chebyshev (MVUE) UCL	1.716458
		95% Non-parametric UCLs	
		CLT UCL	1.34309
		Adj-CLT UCL (Adjusted for skewness)	1.352679
		Mod-t UCL (Adjusted for skewness)	1.349997
		Jackknife UCL	1.348501
		Standard Bootstrap UCL	1.340035
		Bootstrap-t UCL	1.365549
		Hall's Bootstrap UCL	1.363399
RECOMMENDATION		Percentile Bootstrap UCL	1.34
Data are normal (0.05)		BCA Bootstrap UCL	1.34
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1.46919
		97.5% Chebyshev (Mean, Sd) UCL	1.556823
		99% Chebyshev (Mean, Sd) UCL	1.728959

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 7471A	Mercury	T
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.906194	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	0.037	Data are normal at 5% significance level		
Maximum	0.078			
Mean	0.052133	95% UCL (Assuming Normal Distribution)		
Median	0.047	Student's-t UCL	0.058137	
Standard Deviation	0.013201			
Variance	0.000174	Gamma Distribution Test		
Coefficient of Variation	0.253216	A-D Test Statistic	0.488372	
Skewness	0.693809	A-D 5% Critical Value	0.735285	
Gamma Statistics				
k hat	17.71167	K-S Test Statistic	0.169736	
k star (bias corrected)	14.21378	K-S 5% Critical Value	0.221263	
Theta hat	0.002943	Data follow gamma distribution		
Theta star	0.003668	at 5% significance level		
nu hat	531.35	Lognormal Distribution Test		
nu star	426.4133	95% UCLs (Assuming Gamma Distribution)		
Approx.Chi Square Value (.05)	379.5323	Approximate Gamma UCL	0.058573	
Adjusted Level of Significance	0.03235	Adjusted Gamma UCL	0.059426	
Adjusted Chi Square Value	374.0876			
Log-transformed Statistics				
Minimum of log data	-3.296837	Shapiro-Wilk Test Statistic	0.927393	
Maximum of log data	-2.551046	Shapiro-Wilk 5% Critical Value	0.881	
Mean of log data	-2.982446	Data are lognormal at 5% significance level		
Standard Deviation of log data	0.244328	95% UCLs (Assuming Lognormal Distribution)		
Variance of log data	0.059696	95% H-UCL	0.058868	
		95% Chebyshev (MVUE) UCL	0.066533	
		97.5% Chebyshev (MVUE) UCL	0.07278	
		99% Chebyshev (MVUE) UCL	0.085049	
95% Non-parametric UCLs				
		CLT UCL	0.05774	
		Adj-CLT UCL (Adjusted for skewness)	0.058392	
		Mod-t UCL (Adjusted for skewness)	0.058239	
		Jackknife UCL	0.058137	
		Standard Bootstrap UCL	0.057622	
		Bootstrap-t UCL	0.059195	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	0.058407	
		Percentile Bootstrap UCL	0.0576	
		BCA Bootstrap UCL	0.057667	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	0.066991	
		97.5% Chebyshev (Mean, Sd) UCL	0.073419	
		99% Chebyshev (Mean, Sd) UCL	0.086047	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Benzo_a_anth
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.86252	
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	51	Data not normal at 5% significance level		
Maximum	94			
Mean	62.96667	95% UCL (Assuming Normal Distribution)		
Median	62	Student's-t UCL	68.54137	
Standard Deviation	12.25833			
Variance	150.2667	Gamma Distribution Test		
Coefficient of Variation	0.19468	A-D Test Statistic	0.618501	
Skewness	1.242437	A-D 5% Critical Value	0.734582	
Gamma Statistics				
k hat	31.19178	K-S Test Statistic	0.180801	
k star (bias corrected)	24.99787	K-S 5% Critical Value	0.221108	
Theta hat	2.018694	Data follow gamma distribution		
Theta star	2.518882	at 5% significance level		
nu hat	935.7533	95% UCLs (Assuming Gamma Distribution)		
nu star	749.936	Approximate Gamma UCL	68.69725	
Approx.Chi Square Value (.05)	687.3779	Adjusted Gamma UCL	69.44213	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	680.0046	Shapiro-Wilk Test Statistic	0.894865	
Log-transformed Statistics				
Minimum of log data	3.931826	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	4.543295	Data are lognormal at 5% significance level		
Mean of log data	4.12649	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.181953	95% H-UCL	68.74749	
Variance of log data	0.033107	95% Chebyshev (MVUE) UCL	75.86479	
		97.5% Chebyshev (MVUE) UCL	81.46436	
		99% Chebyshev (MVUE) UCL	92.46362	
95% Non-parametric UCLs				
		CLT UCL	68.17277	
		Adj-CLT UCL (Adjusted for skewness)	69.25768	
		Mod-t UCL (Adjusted for skewness)	68.71059	
		Jackknife UCL	68.54137	
		Standard Bootstrap UCL	68.03921	
		Bootstrap-t UCL	70.62775	
RECOMMENDATION				
Data follow gamma distribution (0.05)		Hall's Bootstrap UCL	71.11385	
Use Approximate Gamma UCL		Percentile Bootstrap UCL	68.43333	
		BCA Bootstrap UCL	69.33333	
		95% Chebyshev (Mean, Sd) UCL	76.76296	
		97.5% Chebyshev (Mean, Sd) UCL	82.73263	
		99% Chebyshev (Mean, Sd) UCL	94.45889	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Benzo_b_fluor
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.72676
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.881
Minimum	51	Data not normal at 5% significance level	
Maximum	373		
Mean	111.7333	95% UCL (Assuming Normal Distribution)	
Median	63	Student's-t UCL	152.7117
Standard Deviation	90.10824		
Variance	8119.495	Gamma Distribution Test	
Coefficient of Variation	0.806458	A-D Test Statistic	1.117748
Skewness	2.018736	A-D 5% Critical Value	0.74589
Gamma Statistics			
k hat	2.407844	K-S Test Statistic	0.254623
k star (bias corrected)	1.97072	K-S 5% Critical Value	0.22392
Theta hat	46.40389	Data do not follow gamma distribution	
Theta star	56.69672	at 5% significance level	
nu hat	72.23532	95% UCLs (Assuming Gamma Distribution)	
nu star	59.12159	Approximate Gamma UCL	155.654
Approx.Chi Square Value (.05)	42.43935	Adjusted Gamma UCL	162.2957
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	40.70257	Shapiro-Wilk Test Statistic	0.84072
Log-transformed Statistics			
Minimum of log data	3.931826	Shapiro-Wilk 5% Critical Value	0.881
Maximum of log data	5.921578	Data not lognormal at 5% significance level	
Mean of log data	4.494317	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	0.643316	95% H-UCL	161.6266
Variance of log data	0.413856	95% Chebyshev (MVUE) UCL	190.4315
		97.5% Chebyshev (MVUE) UCL	225.9568
		99% Chebyshev (MVUE) UCL	295.7395
95% Non-parametric UCLs			
		CLT UCL	150.0022
		Adj-CLT UCL (Adjusted for skewness)	162.9601
		Mod-t UCL (Adjusted for skewness)	154.7329
		Jackknife UCL	152.7117
		Standard Bootstrap UCL	148.3346
		Bootstrap-t UCL	186.6513
RECOMMENDATION			
Data are Non-parametric (0.05)		Hall's Bootstrap UCL	199.1183
Use 95% Chebyshev (Mean, Sd) UCL		Percentile Bootstrap UCL	150.3667
		BCA Bootstrap UCL	161.1333
		95% Chebyshev (Mean, Sd) UCL	213.1468
		97.5% Chebyshev (Mean, Sd) UCL	257.0285
		99% Chebyshev (Mean, Sd) UCL	343.2256

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Benzo_k_fluor.
Raw Statistics				
Number of Valid Samples	15	Normal Distribution Test		
Number of Unique Samples	12	Shapiro-Wilk Test Statistic	0.896006	
Minimum	51	Shapiro-Wilk 5% Critical Value	0.881	
Maximum	94	Data are normal at 5% significance level		
Mean	64.03333	95% UCL (Assuming Normal Distribution)		
Median	63	Student's-t UCL	69.69415	
Standard Deviation	12.4477			
Variance	154.9452	Gamma Distribution Test		
Coefficient of Variation	0.194394	A-D Test Statistic	0.486699	
Skewness	0.899259	A-D 5% Critical Value	0.734589	
Gamma Statistics				
k hat	30.20911	K-S Test Statistic	0.196254	
k star (bias corrected)	24.21173	K-S 5% Critical Value	0.221115	
Theta hat	2.11967	Data follow gamma distribution		
Theta star	2.644724	at 5% significance level		
nu hat	906.2732	95% UCLs (Assuming Gamma Distribution)		
nu star	726.3519	Approximate Gamma UCL	69.96158	
Approx.Chi Square Value (.05)	664.804	Adjusted Gamma UCL	70.73284	
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	657.555	Shapiro-Wilk Test Statistic	0.912704	
Log-transformed Statistics				
Minimum of log data	3.931826	Shapiro-Wilk 5% Critical Value	0.881	
Maximum of log data	4.543295	Data are lognormal at 5% significance level		
Mean of log data	4.142761	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.18652	95% H-UCL	70.09789	
Variance of log data	0.03479	95% Chebyshev (MVUE) UCL	77.503	
		97.5% Chebyshev (MVUE) UCL	83.34308	
		99% Chebyshev (MVUE) UCL	94.81479	
95% Non-parametric UCLs				
		CLT UCL	69.31986	
		Adj-CLT UCL (Adjusted for skewness)	70.11724	
		Mod-t UCL (Adjusted for skewness)	69.81853	
		Jackknife UCL	69.69415	
		Standard Bootstrap UCL	68.98655	
		Bootstrap-t UCL	71.27952	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	71.0895	
Use Student's-t UCL		Percentile Bootstrap UCL	69.23333	
		BCA Bootstrap UCL	69.76667	
		95% Chebyshev (Mean, Sd) UCL	78.04276	
		97.5% Chebyshev (Mean, Sd) UCL	84.10465	
		99% Chebyshev (Mean, Sd) UCL	96.01205	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Benzoic Acid
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.651924	
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	676	Data not normal at 5% significance level		
Maximum	4520			
Mean	1560.133	95% UCL (Assuming Normal Distribution)		
Median	1160	Student's-t UCL	2049.415	
Standard Deviation	1075.892			
Variance	1157543	Gamma Distribution Test		
Coefficient of Variation	0.689615	A-D Test Statistic	1.61933	
Skewness	2.213006	A-D 5% Critical Value	0.74187	
Gamma Statistics		K-S Test Statistic	0.258771	
k hat	3.589311	K-S 5% Critical Value	0.22285	
k star (bias corrected)	2.915893	Data do not follow gamma distribution		
Theta hat	434.661	at 5% significance level		
Theta star	535.0448	95% UCLs (Assuming Gamma Distribution)		
nu hat	107.6793	Approximate Gamma UCL	2039.65	
nu star	87.47679	Adjusted Gamma UCL	2109.383	
Approx.Chi Square Value (.05)	66.91122			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	64.69924	Shapiro-Wilk Test Statistic	0.815108	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881	
Minimum of log data	6.516193	Data not lognormal at 5% significance level		
Maximum of log data	8.416267	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	7.206804	95% H-UCL	2027.213	
Standard Deviation of log data	0.505223	95% Chebyshev (MVUE) UCL	2407.242	
Variance of log data	0.25525	97.5% Chebyshev (MVUE) UCL	2792.083	
		99% Chebyshev (MVUE) UCL	3548.028	
95% Non-parametric UCLs				
		CLT UCL	2017.064	
		Adj-CLT UCL (Adjusted for skewness)	2186.67	
		Mod-t UCL (Adjusted for skewness)	2075.87	
		Jackknife UCL	2049.415	
		Standard Bootstrap UCL	1998.651	
		Bootstrap-t UCL	3207.548	
RECOMMENDATION		Hall's Bootstrap UCL	4471.628	
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	2047.133	
		BCA Bootstrap UCL	2206.067	
Use 95% Chebyshev (Mean, Sd) UCL		95% Chebyshev (Mean, Sd) UCL	2771.01	
		97.5% Chebyshev (Mean, Sd) UCL	3294.957	
		99% Chebyshev (Mean, Sd) UCL	4324.149	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Bis(2-Chloroet
Raw Statistics		Normal Distribution Test	
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.895893
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	231	Data are normal at 5% significance level	
Maximum	940		
Mean	599.4	95% UCL (Assuming Normal Distribution)	
Median	615	Student's-t UCL	668.1766
Standard Deviation	151.2343		
Variance	22871.83	Gamma Distribution Test	
Coefficient of Variation	0.25231	A-D Test Statistic	0.967835
Skewness	-0.190634	A-D 5% Critical Value	0.736355
Gamma Statistics		K-S Test Statistic	0.244329
k hat	13.79116	K-S 5% Critical Value	0.221389
k star (bias corrected)	11.07737	Data do not follow gamma distribution	
Theta hat	43.46263	at 5% significance level	
Theta star	54.11031	95% UCLs (Assuming Gamma Distribution)	
nu hat	413.7347	Approximate Gamma UCL	684.3381
nu star	332.3211	Adjusted Gamma UCL	695.6954
Approx.Chi Square Value (.05)	291.0744		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	286.3225	Shapiro-Wilk Test Statistic	0.790411
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	5.442418	Data not lognormal at 5% significance level	
Maximum of log data	6.84588	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	6.359236	95% H-UCL	704.0652
Standard Deviation of log data	0.302003	95% Chebyshev (MVUE) UCL	810.1402
Variance of log data	0.091206	97.5% Chebyshev (MVUE) UCL	899.8301
		99% Chebyshev (MVUE) UCL	1076.009
		95% Non-parametric UCLs	
		CLT UCL	663.6291
		Adj-CLT UCL (Adjusted for skewness)	661.5754
		Mod-t UCL (Adjusted for skewness)	667.8562
		Jackknife UCL	668.1766
		Standard Bootstrap UCL	661.8074
		Bootstrap-t UCL	666.3612
RECOMMENDATION		Hall's Bootstrap UCL	676.3604
Data are normal (0.05)		Percentile Bootstrap UCL	663.4
		BCA Bootstrap UCL	657.6667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	769.6086
		97.5% Chebyshev (Mean, Sd) UCL	843.2581
		99% Chebyshev (Mean, Sd) UCL	987.9281

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Butylbenzylpht
Raw Statistics				
Number of Valid Samples	15	Normal Distribution Test		
Number of Unique Samples	12	Shapiro-Wilk Test Statistic	0.456815	
Minimum	510	Shapiro-Wilk 5% Critical Value	0.881	
Maximum	2390	Data not normal at 5% significance level		
Mean	726.6667	95% UCL (Assuming Normal Distribution)		
Median	615	Student's-t UCL	941.6098	
Standard Deviation	472.6433			
Variance	223391.7	Gamma Distribution Test		
Coefficient of Variation	0.650427	A-D Test Statistic	2.577205	
Skewness	3.553974	A-D 5% Critical Value	0.738511	
Gamma Statistics		K-S Test Statistic	0.380205	
k hat	5.169052	K-S 5% Critical Value	0.222061	
k star (bias corrected)	4.179686	Data do not follow gamma distribution		
Theta hat	140.5803	at 5% significance level		
Theta star	173.8568	95% UCLs (Assuming Gamma Distribution)		
nu hat	155.0715	Approximate Gamma UCL	906.4289	
nu star	125.3906	Adjusted Gamma UCL	931.8228	
Approx.Chi Square Value (.05)	100.5232	Lognormal Distribution Test		
Adjusted Level of Significance	0.03235	Shapiro-Wilk Test Statistic	0.611764	
Adjusted Chi Square Value	97.78378	Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	6.234411			
Maximum of log data	7.779049	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.488631	95% H-UCL	870.8049	
Standard Deviation of log data	0.390561	95% Chebyshev (MVUE) UCL	1022.087	
Variance of log data	0.152538	97.5% Chebyshev (MVUE) UCL	1158.893	
		99% Chebyshev (MVUE) UCL	1427.621	
95% Non-parametric UCLs				
		CLT UCL	927.398	
		Adj-CLT UCL (Adjusted for skewness)	1047.055	
		Mod-t UCL (Adjusted for skewness)	960.2739	
		Jackknife UCL	941.6098	
		Standard Bootstrap UCL	925.22	
		Bootstrap-t UCL	1911.699	
		Hall's Bootstrap UCL	1983.361	
RECOMMENDATION		Percentile Bootstrap UCL	954	
Data are Non-parametric (0.05)		BCA Bootstrap UCL	1091	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	1258.609	
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	1488.781	
		99% Chebyshev (Mean, Sd) UCL	1940.909	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Chrysene
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.796278
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	51	Data not normal at 5% significance level	
Maximum	122		
Mean	67.16667	95% UCL (Assuming Normal Distribution)	
Median	62.5	Student's-t UCL	75.989
Standard Deviation	19.39962		
Variance	376.3452		
Coefficient of Variation	0.288828		
Skewness	1.846484		
Gamma Statistics			
k hat	15.77754		
k star (bias corrected)	12.66648		
Theta hat	4.257106		
Theta star	5.30271	95% UCLs (Assuming Gamma Distribution)	
nu hat	473.3263	Approximate Gamma UCL	76.00522
nu star	379.9944	Adjusted Gamma UCL	77.18052
Approx.Chi Square Value (.05)	335.8053		
Adjusted Level of Significance	0.03235		
Adjusted Chi Square Value	330.6917		
Log-transformed Statistics			
Minimum of log data	3.931826		
Maximum of log data	4.804021	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.175152	95% H-UCL	75.94415
Standard Deviation of log data	0.250502	95% Chebyshev (MVUE) UCL	86.01461
Variance of log data	0.062751	97.5% Chebyshev (MVUE) UCL	94.25124
		99% Chebyshev (MVUE) UCL	110.4305
RECOMMENDATION			
Assuming gamma distribution (0.05)		95% Non-parametric UCLs	
		CLT UCL	75.40567
		Adj-CLT UCL (Adjusted for skewness)	77.95736
		Mod-t UCL (Adjusted for skewness)	76.38701
		Jackknife UCL	75.989
		Standard Bootstrap UCL	75.21487
		Bootstrap-t UCL	81.96464
		Hall's Bootstrap UCL	111.5547
		Percentile Bootstrap UCL	75.8
		BCA Bootstrap UCL	78.36667
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	89.00022
		97.5% Chebyshev (Mean, Sd) UCL	98.44761
		99% Chebyshev (Mean, Sd) UCL	117.0052

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back	Variable:	SW846 8270C	Diethylphthalate
Raw Statistics				
Number of Valid Samples	14	Shapiro-Wilk Test Statistic	0.891452	
Number of Unique Samples	12	Shapiro-Wilk 5% Critical Value	0.874	
Minimum	296	Data are normal at 5% significance level		
Maximum	940			
Mean	545	95% UCL (Assuming Normal Distribution)		
Median	518	Student's-t UCL	619.3843	
Standard Deviation	157.1604			
Variance	24699.38	Gamma Distribution Test		
Coefficient of Variation	0.288368	A-D Test Statistic	0.639908	
Skewness	0.796654	A-D 5% Critical Value	0.734365	
Gamma Statistics				
k hat	13.06174	Data follow gamma distribution		
k star (bias corrected)	10.31041	at 5% significance level		
Theta hat	41.72492			
Theta star	52.85918	95% UCLs (Assuming Gamma Distribution)		
nu hat	365.7287	Approximate Gamma UCL	628.5201	
nu star	288.6916	Adjusted Gamma UCL	640.6478	
Approx.Chi Square Value (.05)	250.3292	Lognormal Distribution Test		
Adjusted Level of Significance	0.03122	Shapiro-Wilk Test Statistic	0.911978	
Adjusted Chi Square Value	245.5903	Shapiro-Wilk 5% Critical Value	0.874	
Log-transformed Statistics				
Minimum of log data	5.690359	Data are lognormal at 5% significance level		
Maximum of log data	6.84588			
Mean of log data	6.262018	95% UCLs (Assuming Lognormal Distribution)		
Standard Deviation of log data	0.292748	95% H-UCL	638.0415	
Variance of log data	0.085701	95% Chebyshev (MVUE) UCL	733.4469	
		97.5% Chebyshev (MVUE) UCL	814.7717	
		99% Chebyshev (MVUE) UCL	974.5184	
95% Non-parametric UCLs				
		CLT UCL	614.0886	
		Adj-CLT UCL (Adjusted for skewness)	623.6443	
		Mod-t UCL (Adjusted for skewness)	620.8748	
		Jackknife UCL	619.3843	
		Standard Bootstrap UCL	613.0847	
		Bootstrap-t UCL	627.3098	
RECOMMENDATION				
Data are normal (0.05)		Hall's Bootstrap UCL	651.5056	
		Percentile Bootstrap UCL	612.7857	
		BCA Bootstrap UCL	619.7857	
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	728.0863	
		97.5% Chebyshev (Mean, Sd) UCL	807.3079	
		99% Chebyshev (Mean, Sd) UCL	962.9234	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Fluoranthene
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.756648
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	51	Data not normal at 5% significance level	
Maximum	200		
Mean	88.46667	95% UCL (Assuming Normal Distribution)	
Median	67	Student's-t UCL	109.9757
Standard Deviation	47.29673		
Variance	2236.981	Gamma Distribution Test	
Coefficient of Variation	0.534628	A-D Test Statistic	1.184869
Skewness	1.544334	A-D 5% Critical Value	0.738649
Gamma Statistics		K-S Test Statistic	0.24669
k hat	4.932954	K-S 5% Critical Value	0.222112
K star (bias corrected)	3.990807	Data do not follow gamma distribution	
Theta hat	17.93381	at 5% significance level	
Theta star	22.16761	95% UCLs (Assuming Gamma Distribution)	
nu hat	147.9886	Approximate Gamma UCL	110.9609
nu star	119.7242	Adjusted Gamma UCL	114.1494
Approx.Chi Square Value (.05)	95.45346		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	92.78721	Shapiro-Wilk Test Statistic	0.845013
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	3.931826	Data not lognormal at 5% significance level	
Maximum of log data	5.298317	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.377856	95% H-UCL	111.868
Standard Deviation of log data	0.446134	95% Chebyshev (MVUE) UCL	132.3113
Variance of log data	0.199035	97.5% Chebyshev (MVUE) UCL	151.7554
		99% Chebyshev (MVUE) UCL	189.9495
95% Non-parametric UCLs			
		CLT UCL	108.5536
		Adj-CLT UCL (Adjusted for skewness)	113.7567
		Mod-t UCL (Adjusted for skewness)	110.7873
		Jackknife UCL	109.9757
		Standard Bootstrap UCL	108.195
		Bootstrap-t UCL	123.7355
RECOMMENDATION		Hall's Bootstrap UCL	111.9236
Data are Non-parametric (0.05)		Percentile Bootstrap UCL	107.7
		BCA Bootstrap UCL	114.0667
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	141.6974
or Modified-t UCL		97.5% Chebyshev (Mean, Sd) UCL	164.7304
		99% Chebyshev (Mean, Sd) UCL	209.9742

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	m+pMethylphe
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.860449
Number of Unique Samples	14	Shapiro-Wilk 5% Critical Value	0.881
Minimum	510	Data not normal at 5% significance level	
Maximum	6960		
Mean	2590	95% UCL (Assuming Normal Distribution)	
Median	2210	Student's-t UCL	3591.076
Standard Deviation	2201.289		
Variance	4845671	Gamma Distribution Test	
Coefficient of Variation	0.849918	A-D Test Statistic	0.836323
Skewness	0.668555	A-D 5% Critical Value	0.757138
Gamma Statistics		K-S Test Statistic	0.220307
k hat	1.31881	K-S 5% Critical Value	0.226383
k star (bias corrected)	1.099493	Data follow approximate gamma distribution at 5% significance level	
Theta hat	1963.891		
Theta star	2355.632	95% UCLs (Assuming Gamma Distribution)	
nu hat	39.5643	Approximate Gamma UCL	4096.919
nu star	32.98478	Adjusted Gamma UCL	4343.188
Approx.Chi Square Value (.05)	20.8524		
Adjusted Level of Significance	0.03235	Lognormal Distribution Test	
Adjusted Chi Square Value	19.67001	Shapiro-Wilk Test Statistic	0.858551
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881
Minimum of log data	6.234411	Data not lognormal at 5% significance level	
Maximum of log data	8.847935		
Mean of log data	7.434618	95% UCLs (Assuming Lognormal Distribution)	
Standard Deviation of log data	1.007642	95% H-UCL	5910.756
Variance of log data	1.015343	95% Chebyshev (MVUE) UCL	6014.222
		97.5% Chebyshev (MVUE) UCL	7454.918
		99% Chebyshev (MVUE) UCL	10284.89
95% Non-parametric UCLs			
		CLT UCL	3524.886
		Adj-CLT UCL (Adjusted for skewness)	3629.72
		Mod-t UCL (Adjusted for skewness)	3607.428
		Jackknife UCL	3591.076
		Standard Bootstrap UCL	3471.865
		Bootstrap-t UCL	3752.049
RECOMMENDATION		Hall's Bootstrap UCL	3542.211
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	3556
Use Approximate Gamma UCL		BCA Bootstrap UCL	3584.667
		95% Chebyshev (Mean, Sd) UCL	5067.469
		97.5% Chebyshev (Mean, Sd) UCL	6139.471
		99% Chebyshev (Mean, Sd) UCL	8245.213

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back\Variable:	SW846 8270C	Phenanthrene
Raw Statistics			
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.920554
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881
Minimum	51	Data are normal at 5% significance level	
Maximum	133		
Mean	81.26667	95% UCL (Assuming Normal Distribution)	
Median	78	Student's-t UCL	92.51073
Standard Deviation	24.72482		
Variance	611.3167	Gamma Distribution Test	
Coefficient of Variation	0.304243	A-D Test Statistic	0.308893
Skewness	0.821246	A-D 5% Critical Value	0.736745
Gamma Statistics		K-S Test Statistic	0.133181
k hat	12.36291	K-S 5% Critical Value	0.221434
k star (bias corrected)	9.934771	Data follow gamma distribution at 5% significance level	
Theta hat	6.573426		
Theta star	8.180024	95% UCLs (Assuming Gamma Distribution)	
nu hat	370.8873	Approximate Gamma UCL	93.50101
nu star	298.0431	Adjusted Gamma UCL	95.14477
Approx.Chi Square Value (.05)	259.045	Lognormal Distribution Test	
Adjusted Level of Significance	0.03235	Shapiro-Wilk Test Statistic	0.955277
Adjusted Chi Square Value	254.5697	Shapiro-Wilk 5% Critical Value	0.881
Log-transformed Statistics		Data are lognormal at 5% significance level	
Minimum of log data	3.931826		
Maximum of log data	4.890349	95% UCLs (Assuming Lognormal Distribution)	
Mean of log data	4.356747	95% H-UCL	94.37415
Standard Deviation of log data	0.293763	95% Chebyshev (MVUE) UCL	108.3411
Variance of log data	0.086297	97.5% Chebyshev (MVUE) UCL	120.085
		99% Chebyshev (MVUE) UCL	143.1536
95% Non-parametric UCLs			
		CLT UCL	91.76728
		Adj-CLT UCL (Adjusted for skewness)	93.21371
		Mod-t UCL (Adjusted for skewness)	92.73634
		Jackknife UCL	92.51073
		Standard Bootstrap UCL	91.18189
		Bootstrap-t UCL	94.7995
RECOMMENDATION		Hall's Bootstrap UCL	94.33458
Data are normal (0.05)		Percentile Bootstrap UCL	91.23333
		BCA Bootstrap UCL	92.8
Use Student's-t UCL		95% Chebyshev (Mean, Sd) UCL	109.0935
		97.5% Chebyshev (Mean, Sd) UCL	121.1342
		99% Chebyshev (Mean, Sd) UCL	144.7859

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Phenol	T
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.792049	
Number of Unique Samples	15	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	229	Data not normal at 5% significance level		
Maximum	2010			
Mean	724.4667	95% UCL (Assuming Normal Distribution)		
Median	620	Student's-t UCL	915.7171	
Standard Deviation	420.5449			
Variance	176858	Gamma Distribution Test		
Coefficient of Variation	0.580489	A-D Test Statistic	0.447333	
Skewness	2.142431	A-D 5% Critical Value	0.739853	
Gamma Statistics		K-S Test Statistic	0.180553	
k hat	4.119318	K-S 5% Critical Value	0.222494	
k star (bias corrected)	3.339899	Data follow gamma distribution		
Theta hat	175.8705	at 5% significance level		
Theta star	216.9127	95% UCLs (Assuming Gamma Distribution)		
nu hat	123.5796	Approximate Gamma UCL	929.4507	
nu star	100.197	Adjusted Gamma UCL	958.9153	
Approx.Chi Square Value (.05)	78.09922			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	75.69946	Shapiro-Wilk Test Statistic	0.960824	
Log-transformed Statistics		Shapiro-Wilk 5% Critical Value	0.881	
Minimum of log data	5.433722	Data are lognormal at 5% significance level		
Maximum of log data	7.60589	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	6.459174	95% H-UCL	966.0698	
Standard Deviation of log data	0.510558	95% Chebyshev (MVUE) UCL	1147.343	
Variance of log data	0.26067	97.5% Chebyshev (MVUE) UCL	1332.05	
		99% Chebyshev (MVUE) UCL	1694.869	
95% Non-parametric UCLs				
		CLT UCL	903.0718	
		Adj-CLT UCL (Adjusted for skewness)	967.2531	
		Mod-t UCL (Adjusted for skewness)	925.7281	
		Jackknife UCL	915.7171	
		Standard Bootstrap UCL	897.4055	
		Bootstrap-t UCL	1043.515	
RECOMMENDATION		Hall's Bootstrap UCL	1768.594	
Data follow gamma distribution (0.05)		Percentile Bootstrap UCL	905.4	
		BCA Bootstrap UCL	969.5333	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	1197.774	
		97.5% Chebyshev (Mean, Sd) UCL	1402.575	
		99% Chebyshev (Mean, Sd) UCL	1804.866	

General Statistics

Data File	P:\W2-mfg\Nuclear Metals RI FS EECA\Back Variable:	SW846 8270C	Pyrene	T
Raw Statistics				
Number of Valid Samples	15	Shapiro-Wilk Test Statistic	0.808298	
Number of Unique Samples	13	Shapiro-Wilk 5% Critical Value	0.881	
Minimum	50	Data not normal at 5% significance level		
Maximum	179			
Mean	94.3	95% UCL (Assuming Normal Distribution)		
Median	76.5	Student's-t UCL	115.8895	
Standard Deviation	47.4736			
Variance	2253.743	Gamma Distribution Test		
Coefficient of Variation	0.503432	A-D Test Statistic	0.830992	
Skewness	1.020456	A-D 5% Critical Value	0.73869	
		K-S Test Statistic	0.17932	
		K-S 5% Critical Value	0.222125	
Gamma Statistics				
k hat	4.905288	Data follow approximate gamma distribution		
k star (bias corrected)	3.968675	at 5% significance level		
Theta hat	19.22415			
Theta star	23.76108	95% UCLs (Assuming Gamma Distribution)		
nu hat	147.1586	Approximate Gamma UCL	118.357	
nu star	119.0602	Adjusted Gamma UCL	121.7684	
Approx.Chi Square Value (.05)	94.86031			
Adjusted Level of Significance	0.03235	Lognormal Distribution Test		
Adjusted Chi Square Value	92.20275	Shapiro-Wilk Test Statistic	0.879886	
		Shapiro-Wilk 5% Critical Value	0.881	
Log-transformed Statistics		Data not lognormal at 5% significance level		
Minimum of log data	3.912023			
Maximum of log data	5.187386	95% UCLs (Assuming Lognormal Distribution)		
Mean of log data	4.441101	95% H-UCL	121.2598	
Standard Deviation of log data	0.461701	95% Chebyshev (MVUE) UCL	143.6301	
Variance of log data	0.213168	97.5% Chebyshev (MVUE) UCL	165.2402	
		99% Chebyshev (MVUE) UCL	207.6888	
		95% Non-parametric UCLs		
		CLT UCL	114.462	
		Adj-CLT UCL (Adjusted for skewness)	117.9129	
		Mod-t UCL (Adjusted for skewness)	116.4278	
		Jackknife UCL	115.8895	
		Standard Bootstrap UCL	113.6588	
		Bootstrap-t UCL	121.7107	
		Hall's Bootstrap UCL	112.7057	
RECOMMENDATION				
Assuming gamma distribution (0.05)		Percentile Bootstrap UCL	114.3667	
		BCA Bootstrap UCL	115.8333	
Use Approximate Gamma UCL		95% Chebyshev (Mean, Sd) UCL	147.7298	
		97.5% Chebyshev (Mean, Sd) UCL	170.8489	
		99% Chebyshev (Mean, Sd) UCL	216.2619	

APPENDIX D

HAND CALCULATIONS OF THE POISSON 95/95 UTL

PROJECT

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3617037023/29

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5/5/05

108/12

Poisson Tolerance Limits (95%)

Method as outlined in EPA 1992 Addendum Guidance.

SW - Assabet - Up:

Copper (Total) w/ DL

4.40J	2.2
143J	143
33.80J	16.9
6.20J	3.1
6.0J	3
2.50J	1.25
4.80J	2.4
6.40J	3.2
4.0J	2.0
4.40J	2.2

$$T_n = 179.25$$

$$\lambda_{T_n} = \frac{1}{2n} \chi^2_{0.95} [2(T_n) + 2]$$

for $\alpha = 0.05$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [360.5]$$

$$\chi^2_{0.95} = \frac{1}{2} [X_{95} + \sqrt{2n-1}]^2$$

where $X_{95} = 1.645$ (from normal dist. table)

$$\chi^2_{0.95} = \frac{1}{2} [1.645 + \sqrt{720}]^2 = 405.5$$

$$\lambda_{T_n} = 20.27$$

$$\text{Find } \chi^2_{0.05} [2K+2] \geq 2\lambda_{T_n} = 40.54$$

χ^2 tables only go to 30 degrees of freedom, but generate table based on approximation $\chi^2_\alpha = \frac{1}{2} [X_\alpha + \sqrt{2n-1}]^2$

From this (and using tables when possible), find

$$2K+2=58 \Rightarrow K = 28 \mu\text{g/L} \quad \text{Hit > OTL}$$

Thallium (Total)

	w/ DL	100x
0.10	0.05	5
0.120	0.06	6
0.020	0.01	1
0.0830	0.041	4.1
0.0370	0.0185	1.85
0.0280	0.014	1.4
0.0230	0.0112	1.12
0.0150	0.0075	0.75
0.33	0.33	33
0.0130	0.0065	0.65

$$T_n = 63.87$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(63.87) + 2]$$

$$= \frac{1}{20} \chi^2_{0.95} (129.74)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{258.48}]^2 = 7.88$$

$$\text{Find } \chi^2_{0.05} [2K+2] \geq (7.88)2 = 15.76$$

$$2K+2=27$$

$$K = 12.5$$

$$[K/100 = 12.5 \mu\text{g/L}]$$

Hit > OTL

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Thorium (Total)

	$\frac{K_{DL}}{10}$	$\times 100$
0.061 U	0.03	3
0.7	0.7	70
0.2 U	0.1	10
0.073 U	0.036	3.6
0.077 U	0.039	3.9
0.019 U	0.009	0.9
0.031 U	0.016	1.6
0.025 U	0.012	1.2
0.098 U	0.049	4.9
0.027 U	0.014	1.4

$$\bar{T}_n = 100.5$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(100.5) + 2] \\ = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{405}\right]^2 = 23.69$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (23.69)(2) = 47.38$$

$$2K+2 = 66$$

$$K = 32$$

$$\boxed{K/100 = 0.32 \mu\text{g/L}}$$

hit > UTL

Example: What if 10x scale factor instead of 100?

$$\bar{T}_n = 10.05$$

$$\lambda_{T_n} = \frac{1}{20} \chi_{0.95}^2 (22.1)$$

$$= \frac{1}{20} (34.2) = 1.721$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq 1.721(2) = 3.442$$

$$2K+2 = 10$$

$$K = 4$$

$$\boxed{K/10 = 0.4 \mu\text{g/L}}$$

Tungsten (Total)

	$\frac{K_{DL}}{10}$	$\times 10$
0.72 U	0.36	3.6
5	5	50
2.4 U	1.2	12
0.23 U	0.115	1.15
0.27 U	0.135	1.35
0.24 U	0.12	1.2
0.17 U	0.085	0.85
0.2 U	0.1	1
0.33 U	0.165	1.65
0.744 U	0.372	3.72

$$\bar{T}_n = 76.52$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [153.04 + 2(76.52) + 2]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{309.08}\right]^2 = 9.24$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (9.24)(2) = 18.48$$

$$2K+2 = 30$$

$$K = 14$$

$$\boxed{K/10 = 1.4 \mu\text{g/L}}$$

hit > UTL

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SW-Assabet-Up (cont)Uranium (Total)

	(%DL)/100
0.015 U	0.75
0.52	52
0.13 U	6.5
0.047 UJ	2.35
0.02 UJ	1
0.003 UJ	0.15
0.017 UJ	0.85
0.015 UJ	0.75
0.026 UJ	1.3
0.007 U	0.35
T_n	66

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [\frac{134}{2(66)+2}]$$

$$= \frac{1}{20} \chi_{0.95}^2 [134]$$

$$= \frac{1}{20} \left(\frac{1}{2} \right) (1.645 + \sqrt{267})^2 = 8.09$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq 2(8.09) = 16.18$$

$$2K+2 = 27$$

$$K = 12.5$$

$$[K/100 = 0.125 \mu\text{g/L}]$$

Hit > UTL

U-238 as Mass (Total)Same concentrations as U(Total) \Rightarrow $[\text{UTL} = 0.125 \mu\text{g/L}]$ Aluminum (Dis)

	%DL
7.8 U	3.9
4.3 U	2.15
5.7 U	2.85
5.7 U	2.85
12.7 U	6.35
85.4	85.4
11.1 U	5.55
15 U	7.5
10.5 U	5.25
9.8 U	4.9
T_n	126.7

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [\frac{255.4}{2(126.7)+2}]$$

$$= \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{509.8}]^2 = 14.67$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (14.67)(2) = 29.34$$

$$2K+2 = 44$$

$$[K = 21 \mu\text{g/L}]$$

Hit > UTL

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SW-Assabet-Up (cont.)Lead (Dissolved)

$$10 \times (\frac{1}{2} \text{DL})$$

0.170	0.85
0.190	0.95
0.290	1.45
0.210J	1.05
0.230J	1.15
2.2J	2.2
0.30J	1.5
0.450J	2.25
0.340J	1.7
0.420	2.1
$T_n = 35$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(35) + 2] = \frac{1}{20} \chi_{0.95}^2 (72)$$

$$\lambda_{T_1} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{143}]^2 = 4.63$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (4.63)(2) = 9.26$$

$$2K+2 = 18$$

$$K = 8$$

$$K/10 = 0.8 \mu\text{g/L}$$

Hit > UTL

Mercury (Dissolved)

0.0370 (9 times)

0.067 (only hit)

Use $100 \times (\frac{1}{2} \text{DL})$

$$T_n = 23.35$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [48.7]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{96.4}]^2 = 3.28$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (3.28)(2) = 6.56$$

$$2K+2 = 14 \Rightarrow K = 6$$

$$K/100 = 0.06 \mu\text{g/L}$$

hit slightly
> UTL

Thallium (Dissolved)

$$100 \times (\frac{1}{2} \text{DL})$$

0.0860	4.3
0.0350	1.75
0.0260	1.3
0.0810	4.05
0.0130	0.65
0.0130	0.65
0.0130	0.65
0.0130	0.65
0.35	35
0.0210	1.05
$T_n = 114.4$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(114.4) + 2] = 230.8$$

$$\lambda_{T_1} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{460.6}]^2 = 13.35$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (13.35)(2) = 26.7$$

$$2K+2 = 41$$

$$K = 19.5$$

$$K/100 = 0.195 \mu\text{g/L}$$

Hit > UTL

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SW-Assabet-Up (Cont.)U-235 as mass (d,1350/ved)

0.001 U (9 times)

0.001

1000 $T_n = 5.5$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(5.5) + 2]$$

$$= \frac{1}{20} (22.4) = 1.12$$

$$\text{Find } \chi_{0.95}^2 [2K+2] \geq (1.12)(2) = 2.24$$

$$2K+2 = 8$$

$$K = 3$$

$$[K/1000 = 0.003 \mu\text{g/L}]$$

SW-Assabet-Site

{ 0.013 U (9 times)

0.017

1000x($\frac{1}{2}$ DL) $T_n = 75.5$ Cadmium (Total)

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(75.5) + 2]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{305}]^2 = 9.13$$

$$\text{Find } \chi_{0.95}^2 [2K+2] \geq (9.13)(2) = 18.26$$

$$2K+2 = 30 \Rightarrow K = 14$$

$$[K/1000 = 0.014 \mu\text{g/L}]$$

Hit slightly > UTL

Thallium (Total)100x($\frac{1}{2}$ DL)

0.013 UJ 0.65

0.013 UJ 0.65

0.013 UJ 0.65

0.032 U 1.6

0.013 U 0.65

0.017 U 0.85

0.013 U 0.65

0.45 45

0.013 U 0.65

0.013 U 0.65

$$T_n = 52$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(52) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{211}]^2 = 6.54$$

$$\text{Find } \chi_{0.95}^2 [2K+2] \geq (6.54)(2) = 13.08$$

$$2K+2 = 23$$

$$K = 10.5$$

$$[K/100 = 0.105 \mu\text{g/L}]$$

Hit > UTL

U-235 as mass (Tot)

Same concentrations as for Up (D,5)

$$[K/1000 = 0.003 \mu\text{g/L}]$$

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SW-Assabet-Site (Cont.)U-238 as mass (Total)

0.0040	$100 \times (\frac{1}{2} \text{DL})$	0.2
0.0060		0.3
0.0070		0.35
0.0090		0.6
0.0390		1.95
0.0380		1.9
0.0390		1.95
0.0150		0.75
0.0330		1.65
0.0380		1.9

$$T_n = \frac{1}{20.55}$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(20.55) + 2]^{43.1}$$

$$= \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{85.2}]^2 = 2.96$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (2.96)(2) = 5.92$$

$$2K+2 = 14 \quad K = 6$$

$$K/100 = 0.06 \mu\text{g/L}$$

Hit > 0.1L

Vanadium (Total)

	$\frac{1}{2} \text{DL}$
0.630	0.315
0.630	0.315
0.630	0.315
4.0	2
4.10	2.05
5.50	2.75
3.70	1.85
0.9	0.9
2.40	1.2
4.50	2.25

$$T_n = 13.94$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(13.94) + 2]^{29.38}$$

$$= \frac{1}{20} (43.66) = 2.18$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (2.18)(2) = 4.36$$

$$2K+2 = 11$$

$$K = 4.5 \mu\text{g/L}$$

* Note some $\frac{1}{2} \text{DL} > \text{hit of } 0.9$

Zirconium (Total)

	$\frac{1}{10} \times (\frac{1}{2} \text{DL})$
0.0840	0.42
0.320	1.6
0.0540	0.27
0.240	1.2
0.0910	0.455
0.370	1.85
0.330	1.65
0.140	0.7
0.96	9.6
0.0750	0.375

$$T_n = 21.9$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi_{0.95}^2 [2(21.9) + 2]^{45.8}$$

$$= \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{90.6}]^2 = 3.12$$

$$\text{Find } \chi_{0.05}^2 [2K+2] \geq (3.12)(2) = 6.24$$

$$2K+2 = 14$$

$$K = 6$$

$$K/10 = 0.6 \mu\text{g/L}$$

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SW-Assabet-Site (cont)Mercury (Dissolved)

0.037 (9 times)

0.21

@ $100x(\frac{1}{2}DL)$ $T_n = 37.65$

$$\lambda_{T_n} = \frac{1}{2(10)} X_{0.95}^2 [\frac{77.3}{2(37.65)} + 2]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{153.6}]^2 = 4.93$$

$$\text{Find } X_{0.95}^2 [2K + 2] \geq (4.93)(2) = 9.86$$

$$2K + 2 = 19 \quad K = 8.5$$

$$K/100 = 0.085 \mu\text{g/L}$$

max > UTL

Thallium (Dissolved)0.0150 $100x(\frac{1}{2}DL)$
0.75

0.0130 0.65

0.0130 0.65

0.040 2

0.0290 1.45

0.020 1

0.0130 0.65

0.39 39

0.0130 0.65

0.0130 0.65

$$T_n = 47.45$$

$$\lambda_{T_n} = \frac{1}{2(10)} X_{0.95}^2 [\frac{96.9}{2(47.45)} + 2]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{192.8}]^2 = 6.023$$

$$\text{Find } X_{0.95}^2 [2K + 2] \geq (6.023)(2) = 12.046$$

$$2K + 2 = 23 \quad K = 10.5$$

$$K/100 = 0.105 \mu\text{g/L}$$

Zirconium (Dissolved)0.0990 $10x(\frac{1}{2}DL)$
0.495

0.0950 0.475

0.0720 0.36

0.290J 1.45

0.250J 1.25

0.180J 0.9

0.120J 0.6

1.10 5.5

0.590J 2.95

1.15 11

$$T_n = 24.98$$

$$\lambda_{T_n} = \frac{1}{2(10)} X_{0.95}^2 [51.96]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2} \right) [1.645 + \sqrt{102.92}]^2 = 3.48$$

$$\text{Find } X_{0.95}^2 [2K + 2] \geq (3.48)(2) = 6.96$$

$$2K + 2 = 17$$

$$K = 7.5$$

$$K/10 = 0.75 \mu\text{g/L}$$

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Soil - Forest - 8310Benzo(a)anthracene
($\chi^2_{0.95}$ DL)

18.90	9.45
19.80	9.9
19.80	9.9
19.90	9.95
19.40J	9.7
21.50	10.75
20.90	10.45
19.50	9.75
21.50	10.75
1.910J	0.95
<u>25.2J</u>	25.2
1.980	0.99
21.0	10.5
1.920	0.96
19.90	<u>9.95</u>

$$T_n = 139.15$$

Benzo(a)pyrene
($\chi^2_{0.95}$ DL)

18.90	9.45
19.80	9.9
19.80	9.9
19.90	9.95
19.40J	9.7
21.50	10.75
20.90	10.75
19.50	9.75
21.50	10.75
1.910J	0.95
<u>12</u>	12
1.980	0.99
21.0	10.5
9.060	3.53
19.90	<u>9.95</u>

$$T_n = 128.52$$

$$\lambda_{T_n} = \frac{1}{2(15)} \chi^2_{0.95} [280.3]$$

$$\lambda_{T_n} = \frac{1}{30} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{559.6} \right]^2$$

$$= 10.67$$

$$\text{Find } \chi^2_{0.05}(2K+2) \geq (0.91)(2) = 19.82$$

$$2K+2 = 34$$

$$K = 16 \mu\text{g/L}$$

$$\lambda_{T_n} = \frac{1}{2(15)} \chi^2_{0.95} (259.04)$$

$$\lambda_{T_n} = \frac{1}{30} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{517.08} \right]^2 = 9.91$$

$$2K+2 = 33$$

$$K = 15.5 \mu\text{g/L}$$

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SD-Assabet-UP

<u>1,1-DCA</u>	<u>10X(DL/z)</u>
0.9020	4.51
0.9160	4.58
0.8940	4.47
1.430	7.15
1.20	6
0.9290	4.65
0.9350	4.67
1.330J	6.65
1.380	6.90
2.1	21
	$\bar{T}_n = 70.58$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (143, 16)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{285.32} \right]^2 = 8.59$$

$$\text{Find } \chi^2_{0.05} [2K+2] \geq (8.59)(2) = 17.18$$

$$2K+2 = 29$$

$$K = 13.5$$

$$K/10 = 1.35 \mu\text{g/kg}$$

<u>1,1-DCE</u>	<u>10X(DL/z)</u>
0.9020	4.51
0.9160	4.58
0.8940	4.47
1.40	7
1.20	6
0.9290	4.65
0.9350	4.67
23.4J	234
3.30	16.5
5.20	26
	$\bar{T}_n = 312.38$

Too high use $T_n = 31.24$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (64.48)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{127.96} \right]^2 = 4.20$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (4.20)(2) = 8.40$$

$$2K+2 = 17$$

$$K = 7.5 \mu\text{g/kg}$$

<u>Carbon Disulfide (1/2 DL)</u>	
4.510J	2.25
4.580	2.29
4.470	2.23
7.170	3.58
5.980	2.99
4.640J	2.32
4.670J	2.33
6.630J	3.32
6.910	3.45
- 3.25	3.2
	$\bar{T}_n = 27.96$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (57.92)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{114.84} \right]^2 = 3.826$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (3.826)(2) = 7.652$$

$$2K+2 = 16$$

$$K = 7 \mu\text{g/kg}$$

Note hit is only fourth highest ordered value.

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SD-Assabet-Up (cont.)TCFM $10x(DL/2)$

0.9020J	4.51
0.916U	4.58
0.894U	4.47
1.43U	7.15
1.2U	6
3.6	3.6
0.935U	4.67
1.330J	6.65
1.38U	6.9
1.31U	6.55
$T_n = \frac{6.55}{87.48}$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (176.96)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{352.92} \right]^2 = 10.44$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (10.44)(2) = 20.88$$

$$2K+2 = 34$$

$$K = 16$$

$$\boxed{K/10 = 1.6 \mu\text{g}/\text{Kg}}$$

SD-Assabet-Site1,1-DCA $10x(DL/2)$

0.47J	4.7
1.12U	5.6
1.26U	6.3
0.85U	4.27
1.06U	5.3
1.09U	5.45
0.928U	4.64
0.799U	4.00
1U	5
0.923U	4.62
$T_n = \frac{4.62}{49.88}$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (101.76)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{202.56} \right]^2 = 6.3$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (6.3)(2) = 12.6$$

$$2K+2 = 23$$

$$K = 10.5$$

$$\boxed{K/10 = 1.05 \mu\text{g}/\text{Kg}}$$

5 DL/2 > hit

1,1-DCE $10x(DL/2)$

0.812U	4.06
1.12U	5.6
1.3U	6.5
2	20
1.06U	5.3
1.09U	5.45
0.928U	4.64
0.799U	4.0
1U	5
0.923U	4.62
$T_n = 65.17$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} (132.34)$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) \left[1.654 + \sqrt{263.68} \right]^2 = 7.99$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq 2(7.99) = 15.98$$

$$2K+2 = 27$$

$$K = 12.5$$

$$\boxed{K/10 = 1.25 \mu\text{g}/\text{Kg}}$$

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0.180J	9
0.280J	14
0.150J	7.5
0.160J	8
0.470J	23.5
0.260J	13
0.240J	12
0.320J	16
0.220J	11
0.66 J	66

$$\bar{T}_n = 180$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(180) + 2]^{362}$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{723}]^2 = 20.35$$

$$\text{Find } \chi^2_{0.05} [2K+2] \geq 2(20.35) = 40.7$$

$$2K+2 = 58$$

$$K = 28$$

$$[K/100 = 0.28 \text{ mg/Kg}]$$

SD - Maynard - 8310Fluorene $(DL/2)/10$

329J	32.9
1090	5.45
87.90	1.395
90.80	1.54
2680	13.4
91.40	4.57
88.20	4.41
88.50	4.425
2340	11.7
1100	5.5

$$\bar{T}_n = 91.29$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(91.29) + 2]^{184.58}$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{368.16}]^2 = 10.85$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq 2(10.85) = 21.7$$

$$2K+2 = 35$$

$$K = 16.5$$

$$[10K = 165 \mu\text{g/Kg}]$$

SD - Maynard - 8270CBenzoic Acid $10X(DL/2)$

as mg/Kg	1.080J	5.4
	1.090	5.45
	0.638J	6.38
	0.9080J	4.54
	10.70	53.5
	3.660	18.3
	3.530	17.65
	0.8850	4.42
	3.74	18.7
	1.10	5.5

$$\bar{T}_n = 139.84$$

$$\lambda_{T_n} = \frac{1}{20} \chi^2_{0.95} [281.68]$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{562.36}]^2 = 16.08$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq 2(16.08) = 32.16$$

$$2K+2 = 48$$

$$K = 23$$

$$[K/10 = 2.3 \text{ mg/Kg}]$$

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SD - Maynard - B270C (cont.)Dibengofuran 10x(1/2DL)

(as mg/kg)	0.539 U5	2.7
	0.133 J	1.33
	0.44 U	2.2
	0.454 U	2.27
	5.36 U	20.8
	1.83 U	9.15
	1.76 U	8.8
	0.4430	2.21
	1.870	9.35
	0.5480 U	2.74
	$\bar{T}_n = 67.55$	

$$\lambda_{T_n} = \frac{1}{20} \chi^2_{0.95} (137.1)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.654 + \sqrt{273.2} \right]^2 = 8.26$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (8.26)(2) = 16.52$$

$$2K+2 = 28$$

$$K = 13$$

$$\boxed{K/10 = 1.3 \text{ mg/kg}}$$

only hit is the lowest value

SD - Assabet - Site

Selenium	10x(1/2DL)
0.760	3.8
0.880	4.4
0.810	4.05
0.95	9.5
1.30	6.5
0.470	2.35
1.20	6
0.3550	1.77
0.150	3.25
0.80	4.0
	$\bar{T}_n = 42.62$

$$\lambda_{T_n} = \frac{1}{20} \chi^2_{0.95} (87.24)$$

$$\lambda_{T_n} = \frac{1}{20} \left(\frac{1}{2}\right) \left[1.654 + \sqrt{173.48} \right]^2 = 5.49$$

$$\text{Find } \chi^2_{0.05} (2K+2) \geq (5.49)(2) = 10.98$$

$$2K+2 = 21$$

$$K = 9.5$$

$$\boxed{K/10 = 0.95 \text{ mg/kg}}$$

n	Chi-sq(0.05)	n	Chi-sq(0.05)	n	Chi-sq(0.05)	n	Chi-sq(0.05)
31	19.01	51	35.32	71	52.32	91	69.72
32	19.80	52	36.16	72	53.18	92	70.60
33	20.59	53	37.00	73	54.04	93	71.48
34	21.39	54	37.84	74	54.91	94	72.36
35	22.19	55	38.68	75	55.77	95	73.24
36	22.99	56	39.52	76	56.64	96	74.12
37	23.80	57	40.37	77	57.51	97	75.00
38	24.61	58	41.21	78	58.37	98	75.88
39	25.42	59	42.06	79	59.24	99	76.76
40	26.23	60	42.91	80	60.11		
41	27.05	61	43.76	81	60.98		
42	27.87	62	44.61	82	61.85		
43	28.69	63	45.46	83	62.72		
44	29.51	64	46.31	84	63.59		
45	30.33	65	47.17	85	64.47		
46	31.16	66	48.03	86	65.34		
47	31.99	67	48.88	87	66.22		
48	32.82	68	49.74	88	67.09		
49	33.65	69	50.60	89	67.97		
50	34.49	70	51.46	90	68.84		

Expansion of the χ^2 Distribution Table for 31 to 99 degrees of freedom ($\alpha=0.05$) according to the formula given in

Beyer, W., ^{ed.} 1991. CRC Standard Probability and Statistics. ¹ Tables and Formulae. p. 204. CRC Press. Boca Raton, FL.

$$\chi_{\alpha}^2 = \frac{1}{2} \left[X_{\alpha} + \sqrt{2n-1} \right]^2$$

where X_{α} is the α -point of the cumulative normal distribution.

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Conant Well Property Sediments

SVOC	Indeno[1,2,3-cd] pyrene	$\frac{1}{10}$
	$\frac{1}{2} DL/10$	
106 UJ	5.3	
99.6 U	4.98	
97 U	4.85	
93 U	4.65	
99 UJ	4.95	
138 UJ	6.9	
152 UJ	7.6	
139 UJ	6.95	
151 UJ	7.55	
532 J	53.2	
		$T_n = 106.93$

$$\lambda_{T_n} = \frac{1}{2(10)} \bar{X}_{0.05}^2 [2(106.93) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{430.72}]^2$$

$$\lambda_{T_n} = 12.54$$

$$\text{Find } \bar{X}_{0.05}^2 [2K+2] \geq 2\lambda_{T_n} = 25.08$$

$$2K+2 = 39 \Rightarrow K = 18.5$$

$$\boxed{10K = 185 \mu\text{g}/\text{kg}}$$

Hudson Bog - SW (Total)

Silver	$\frac{1}{2} DL \times 100$
0.033 U	1.65
0.016 U	0.8
0.012 U	0.6
0.01 U	0.5
0.021 U	1.05
0.026	2.6
0.02 U	1.0
0.008 U	0.4
0.018 U	0.9
0.015 U	0.75
$T_n =$	10.25

$$\lambda_{T_n} = \frac{1}{2(10)} \bar{X}_{0.05}^2 [2(10.25) + 2]$$

$$\lambda_{T_n} = \frac{1}{20} (34.5) = 1.725$$

$$\text{Find } \bar{X}_{0.05}^2 [2K+2] \geq 2T_n = 3.45$$

$$2K+2 = 10$$

$$K = 4$$

$$\boxed{\frac{K}{100} = 0.04 \mu\text{g}/\text{L}}$$

Tungsten	$\frac{1}{2} DL \times 10$
0.40	2.0
0.26 U	1.3
0.18 U	0.9
0.15 U	0.75
0.23 U	1.15
0.35 U	1.75
0.87	8.7
0.20	1.0
0.18 U	0.9
0.26 U	1.3
$T_n =$	19.75

$$\lambda_{T_n} = \frac{1}{2(10)} \bar{X}_{0.05}^2 [2(19.75) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) [1.645 + \sqrt{82}]^2$$

$$\lambda_{T_n} = 2.84$$

$$\text{Find } \bar{X}_{0.05}^2 [2K+2] \geq 2T_n = 5.72$$

$$2K+2 = 13 \Rightarrow K = 5.5$$

$$\boxed{\frac{K}{10} = 0.55 \mu\text{g}/\text{L}}$$

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Hudson Bog - SW (Dissolved)Thallium $\frac{1}{2} \text{DL} \times 10^0$

0.072 U	3.6
0.39	39
0.15 U	7.5
0.094 U	4.7
0.076 U	3.8
0.068 U	3.4
0.061 U	3.05
0.081 U	4.05
0.057 U	2.85
0.047 U	2.35
$T_n = 74.3$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(74.3) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{1300.2}\right]^2$$

$$\lambda_{T_n} = 9.00$$

Find $\chi^2_{0.05} [2K+2] \geq 2\lambda_{T_n} = 18$

$$2K+2 = 30 \quad K = 14$$

$$\frac{K}{100} = 0.14 \mu\text{g/L}$$

Zirconium $\frac{1}{2} \text{DL} \times 10^-1$

0.5 U	2.5
0.53	5.3
$T_n = 27.8$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(27.8) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{114.2}\right]^2$$

$$\lambda_{T_n} = 3.80$$

Find $\chi^2_{0.05} [2K+2] \geq 2\lambda_{T_n} = 7.6$

$$2K+2 = 16 \quad K = 7$$

$$\frac{K}{10} = 0.70 \mu\text{g/L}$$

Hudson Bog Peat SVOLsBenz(a)anthracene $\frac{1}{2} \text{DL}/10$

103 UJ	5.15
153 UJ	7.65
126 UJ	6.3
102 UJ	5.1
124 UJ	6.2
125 UJ	6.25
78 J	7.8
123 UJ	6.15
102 UJ	5.1
188 UJ	9.4
131 UJ	6.55
$T_n = 71.65$	

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} [2(71.65) + 2]$$

$$= \frac{1}{20} \left(\frac{1}{2}\right) \left[1.645 + \sqrt{209.6}\right]^2$$

$$\lambda_{T_n} = 8.71$$

Find $\chi^2_{0.05} [2K+2] \geq 2\lambda_{T_n} = 17.42$

$$2K+2 = 29 \quad K = 13.4$$

$$10K = 134 \mu\text{g/L}$$

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Hudson Bog Peat (cont.)

Butylbenzylphthalate KD4/100

1030 UJ	5.15
2390 J	23.9
1260 UJ	6.3
1020 UJ	5.1
1240 UJ	6.2
1250 UJ	6.25
1220 UJ	6.1
1230 UJ	6.15
1020 UJ	5.1
1880 UJ	9.4
1310 UJ	6.55

$$T_n = \frac{6.55}{86.2}$$

$$\lambda_{T_n} = \frac{1}{2(10)} \chi^2_{0.95} \left[\frac{174.4}{2(86.2) + 2} \right]$$

$$= \frac{1}{20} \left(\frac{1}{2} \right) \left[1.645 + \sqrt{347.8} \right]^2$$

$$\lambda_{T_n} = 10.3$$

$$\text{Fnd } \chi^2_{0.95} [2K+2] \geq 2\lambda_{T_n} = 20.6$$

$$2K+2 = 34 \quad K=16$$

$$100K = 1600 \mu\text{g/Kg}$$

86.2

APPENDIX E

OUTPUTS FOR t-TESTS AND WRS TESTS

- **E-1 ASSABET RIVER SURFACE WATER UPSTREAM VERSUS SITE**
- **E-2 ASSABET RIVER SURFACE WATER UPSTREAM VERSUS DOWNSTREAM**
- **E-3 ASSABET RIVER SEDIMENT UPSTREAM VERSUS SITE**
- **E-4 ASSABET RIVER SEDIMENT UPSTREAM VERSUS DOWNSTREAM**
- **E-5 HUDSON BOG PEAT VERSUS SEDIMENT**

E-1 ASSABET RIVER SURFACE WATER UPSTREAM VERSUS SITE

Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AL-D	10	12.67	25.6101	8.098625	-5.650363	30.99036
AL-D	10	10.68	6.014205	1.901859	6.377697	14.9823

Note: T-alpha (AL-D) = 2.2622, T-alpha (AL-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	1.99	18.60172	8.318942	-15.48745	19.46745
Unequal	9.99	1.99	26.3068	8.318942	-16.54836	20.52836

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2285

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2392	0.813643	Accept Ho	0.055909	0.011801
Difference < 0	0.2392	0.593179	Accept Ho	0.030377	0.005409
Difference > 0	0.2392	0.406821	Accept Ho	0.078608	0.017676
Difference: (AL-D)-(AL-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2392	0.815777	Accept Ho	0.055419	0.011558
Difference < 0	0.2392	0.592112	Accept Ho	0.030843	0.005602
Difference > 0	0.2392	0.407888	Accept Ho	0.077605	0.017134
Difference: (AL-D)-(AL-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AL-D)	3.9532	0.000077	Reject normality
Kurtosis Normality (AL-D)	3.5503	0.000385	Reject normality
Omnibus Normality (AL-D)	28.2325	0.000001	Reject normality
Skewness Normality (AL-D)	1.1257	0.260307	Cannot reject normality
Kurtosis Normality (AL-D)	-0.5809	0.561325	Cannot reject normality
Omnibus Normality (AL-D)	1.6045	0.448311	Cannot reject normality
Variance-Ratio Equal-Variance Test	18.1329	0.000194	Reject equal variances
Modified-Levene Equal-Variance Test	0.3119	0.583409	Cannot reject equal variances

Two-Sample Test Report

Page

2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AL-D	10	5.075	2.85	7.5
AL-D	10	8.55	4.9	17.3

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AL-D	23.5	78.5	105	13.21881
AL-D	76.5	131.5	105	13.21881

Number Sets of Ties = 2, Multiplicity Factor = 12

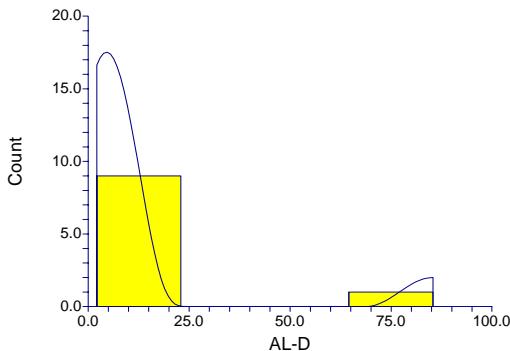
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value
Diff<>0			-2.0047	0.044993	Reject Ho	-1.9669
Diff<0			-2.0047	0.022497	Reject Ho	-1.9669
Diff>0			-2.0047	0.977503	Accept Ho	-2.0425

Kolmogorov-Smirnov Test For Different Distributions

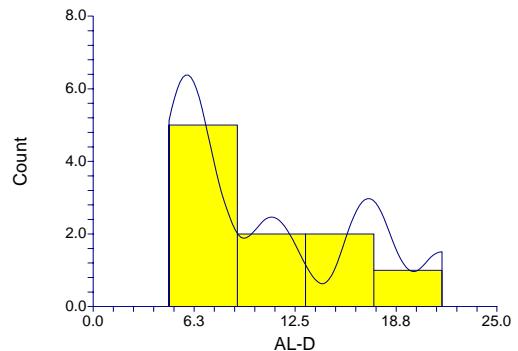
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	
D(1)<D(2)	0.500000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	0.1678

Plots Section

Histogram of AL-D



Histogram of AL-D

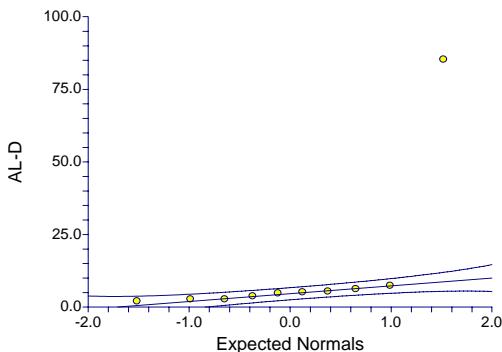


Two-Sample Test Report

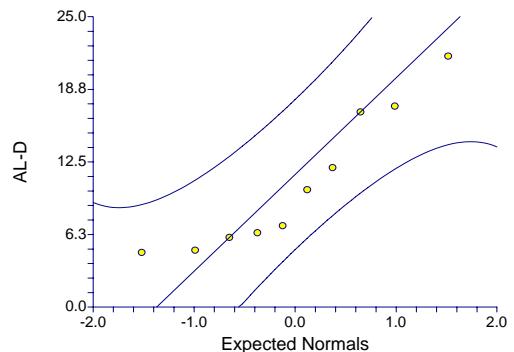
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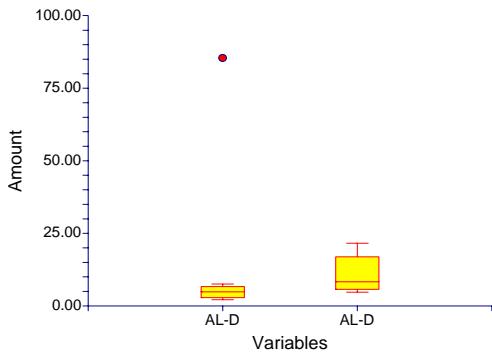
Normal Probability Plot of AL-D



Normal Probability Plot of AL-D



Box Plot



Two-Sample Test Report

Page 1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AS-D	10	1.082	0.5582075	0.1765207	0.6826825	1.481318
AS-D	10	1.1	0.4658087	0.1473017	0.7667805	1.43322

Note: T-alpha (AS-D) = 2.2622, T-alpha (AS-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.018	0.5140882	0.2299072	-0.5010172	0.4650172
Unequal	17.44	-0.018	0.7270305	0.2299072	-0.502129	0.466129

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1058

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0783	0.938459	Accept Ho	0.050631	0.010191
Difference < 0	-0.0783	0.469230	Accept Ho	0.058271	0.012109
Difference > 0	-0.0783	0.530770	Accept Ho	0.042692	0.008219
Difference: (AS-D)-(AS-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0783	0.938487	Accept Ho	0.050629	0.010189
Difference < 0	-0.0783	0.469243	Accept Ho	0.058261	0.012103
Difference > 0	-0.0783	0.530757	Accept Ho	0.042701	0.008223
Difference: (AS-D)-(AS-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AS-D)	-0.0637	0.949246	Cannot reject normality
Kurtosis Normality (AS-D)	-2.2063	0.027360	Reject normality
Omnibus Normality (AS-D)	4.8720	0.087510	Cannot reject normality
Skewness Normality (AS-D)	-0.8062	0.420132	Cannot reject normality
Kurtosis Normality (AS-D)	-1.5778	0.114615	Cannot reject normality
Omnibus Normality (AS-D)	3.1394	0.208112	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.4361	0.598447	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.6651	0.425420	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AS-D	10	1.15	0.48	1.7
AS-D	10	1.25	0.48	1.5

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AS-D	51.5	106.5	105	12.88614
AS-D	48.5	103.5	105	12.88614

Number Sets of Ties = 4, Multiplicity Factor = 408

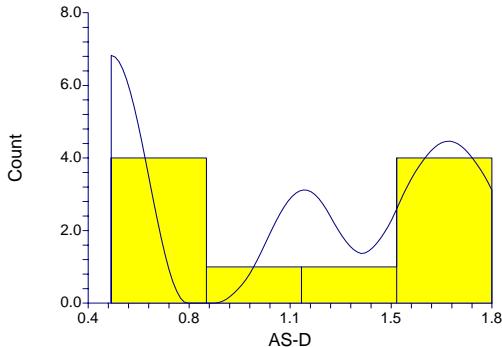
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value
Diff<>0			0.1164	0.907332	Accept Ho	0.0776
Diff<0			0.1164	0.546334	Accept Ho	0.1552
Diff>0			0.1164	0.453666	Accept Ho	0.0776

Kolmogorov-Smirnov Test For Different Distributions

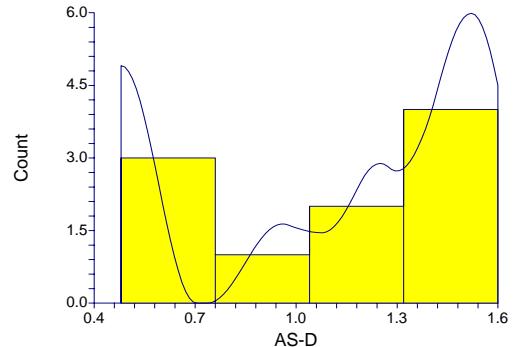
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

Histogram of AS-D

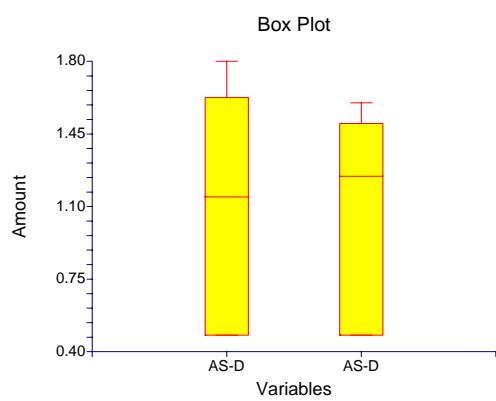
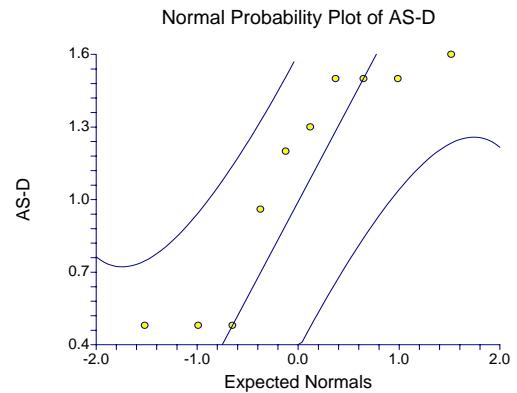
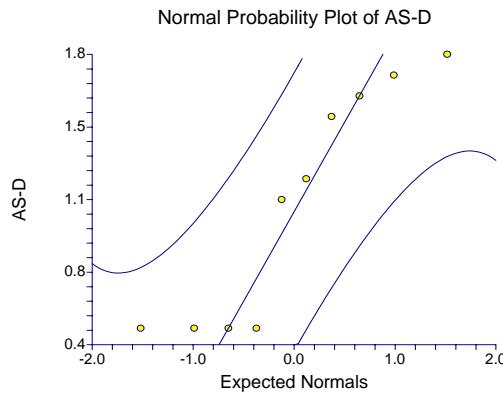


Histogram of AS-D



Two-Sample Test Report

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Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BA-D	10	17.51	0.6454111	0.2040969	17.0483	17.9717
BA-D	10	16.94	0.4971027	0.1571977	16.58439	17.29561

Note: T-alpha (BA-D) = 2.2622, T-alpha (BA-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.57	0.5760497	0.2576173	2.876616E-02	1.111234
Unequal	16.90	0.57	0.8146574	0.2576173	2.622613E-02	1.113774

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1108

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.2126	0.040089	Reject Ho	0.553255	0.286463
Difference < 0	2.2126	0.979955	Accept Ho	0.000079	0.000006
Difference > 0	2.2126	0.020045	Reject Ho	0.685594	0.390106
Difference: (BA-D)-(BA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.2126	0.040986	Reject Ho	0.550183	0.282142
Difference < 0	2.2126	0.979507	Accept Ho	0.000080	0.000006
Difference > 0	2.2126	0.020493	Reject Ho	0.683616	0.386029
Difference: (BA-D)-(BA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BA-D)	0.5057	0.613085	Cannot reject normality
Kurtosis Normality (BA-D)	0.1535	0.877998	Cannot reject normality
Omnibus Normality (BA-D)	0.2793	0.869675	Cannot reject normality
Skewness Normality (BA-D)	0.0418	0.966679	Cannot reject normality
Kurtosis Normality (BA-D)	-0.5032	0.614847	Cannot reject normality
Omnibus Normality (BA-D)	0.2549	0.880327	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.6857	0.448619	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.9427	0.344442	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BA-D	10	17.45	16.9	18.1
BA-D	10	17	16.4	17.6

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BA-D	77	132	105	13.18392
BA-D	23	78	105	13.18392

Number Sets of Ties = 6, Multiplicity Factor = 54

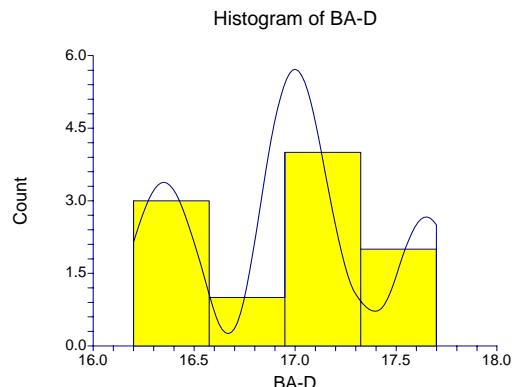
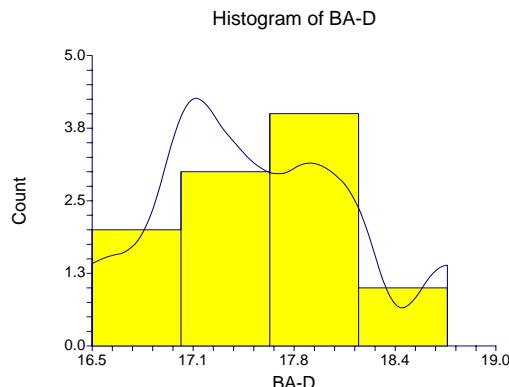
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.0479	0.040565	Reject Ho	2.0100	0.044429	Reject Ho
Diff<0			2.0479	0.979718	Accept Ho	2.0859	0.981505	Accept Ho

Diff>0	2.0479	0.020282	Reject Ho	2.0100	0.022214	Reject Ho
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Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.500000	0.5623	.025	Accept Ho	

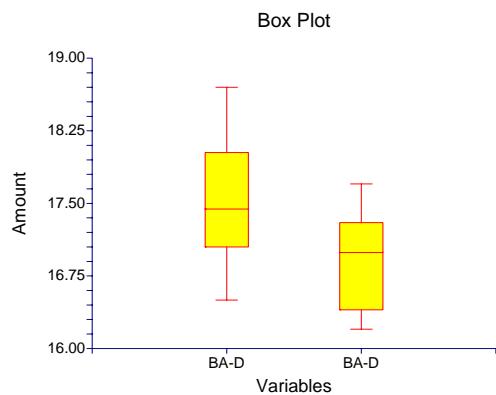
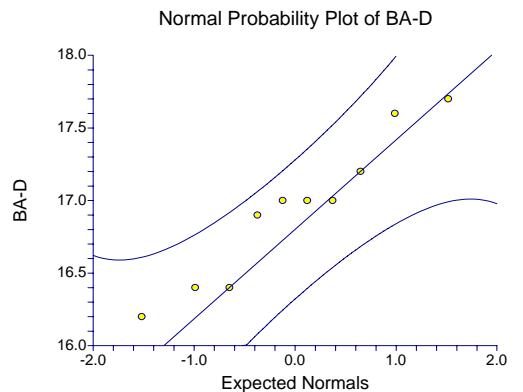
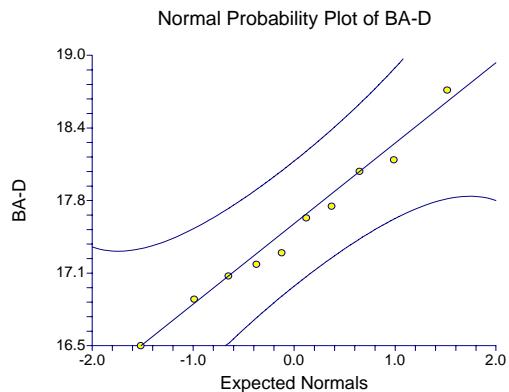
Plots Section



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CA-D	10	18950	613.279	193.9358	18511.29	19388.71
CA-D	10	18870	614.7267	194.3936	18430.25	19309.75

Note: T-alpha (CA-D) = 2.2622, T-alpha (CA-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	80	614.0032	274.5906	-496.8935	656.8934
Unequal	18.00	80	868.3317	274.5906	-496.8937	656.8937

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1009

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2913	0.774120	Accept Ho	0.058780	0.012690
Difference < 0	0.2913	0.612940	Accept Ho	0.027083	0.004702
Difference > 0	0.2913	0.387060	Accept Ho	0.086236	0.019894
Difference: (CA-D)-(CA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2913	0.774120	Accept Ho	0.058780	0.012690
Difference < 0	0.2913	0.612940	Accept Ho	0.027083	0.004702
Difference > 0	0.2913	0.387060	Accept Ho	0.086236	0.019894
Difference: (CA-D)-(CA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CA-D)	-0.4136	0.679189	Cannot reject normality
Kurtosis Normality (CA-D)	-1.1830	0.236825	Cannot reject normality
Omnibus Normality (CA-D)	1.5704	0.456020	Cannot reject normality
Skewness Normality (CA-D)	0.4137	0.679108	Cannot reject normality
Kurtosis Normality (CA-D)	-0.7462	0.455558	Cannot reject normality
Omnibus Normality (CA-D)	0.7279	0.694919	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.0047	0.994511	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0000	1.000000	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CA-D	10	19100	18200	19500
CA-D	10	18900	18200	19600

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CA-D	53.5	108.5	105	13.18891
CA-D	46.5	101.5	105	13.18891

Number Sets of Ties = 5, Multiplicity Factor = 48

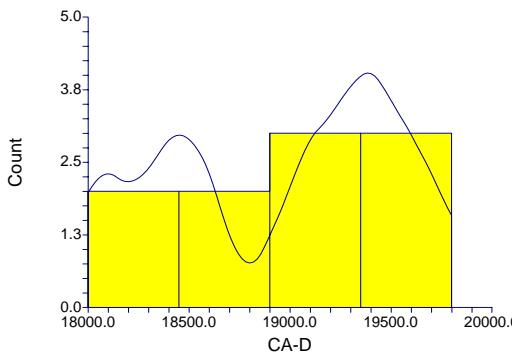
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.2654	0.790721	Accept Ho	0.2275	0.820063	Accept Ho
Diff<0			0.2654	0.604639	Accept Ho	0.3033	0.619164	Accept Ho
Diff>0			0.2654	0.395361	Accept Ho	0.2275	0.410032	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

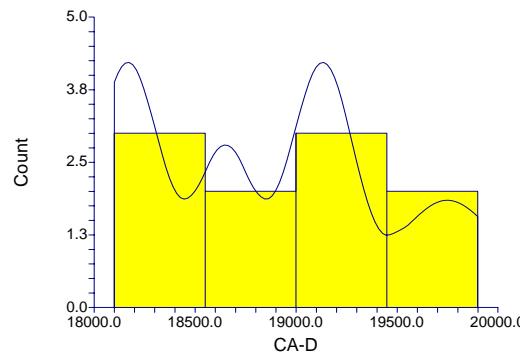
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

Histogram of CA-D

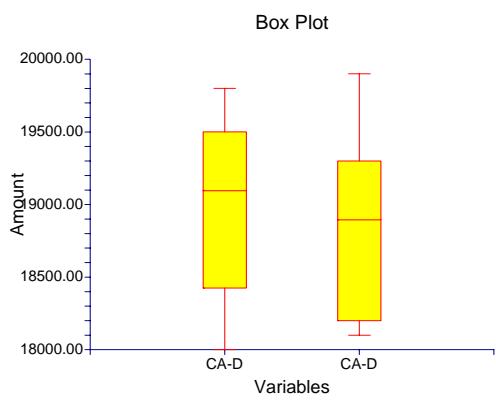
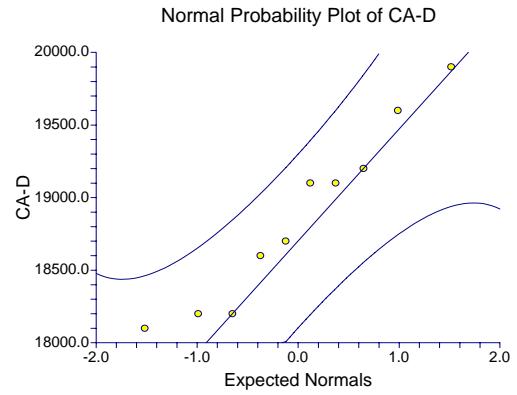
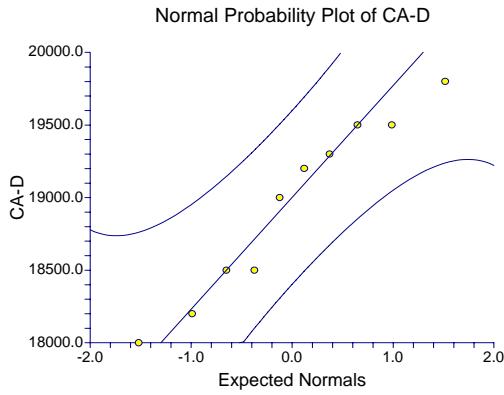


Histogram of CA-D



Two-Sample Test Report

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Two-Sample Test Report

Page 1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CO-D	10	0.305	0.1179218	3.729015E-02	0.2206438	0.3893562
CO-D	10	0.175	0	0	0.175	0.175

Note: T-alpha (CO-D) = 2.2622, T-alpha (CO-D) = 0.0000

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.13	8.338332E-02	3.729015E-02	5.165629E-02	0.2083437
Unequal	9.00	0.13	0.1179218	3.729015E-02	4.564381E-02	0.2143562

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2622

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.4862	0.002636	Reject Ho	0.909062	0.721061
Difference < 0	3.4862	0.998682	Accept Ho	0.000000	0.000000
Difference > 0	3.4862	0.001318	Reject Ho	0.955994	0.814063
Difference: (CO-D)-(CO-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.4862	0.006871	Reject Ho	0.872245	0.605685
Difference < 0	3.4862	0.996564	Accept Ho	0.000000	0.000000
Difference > 0	3.4862	0.003436	Reject Ho	0.941024	0.733916
Difference: (CO-D)-(CO-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CO-D)	-0.1495	0.881134	Cannot reject normality
Kurtosis Normality (CO-D)	-1.8450	0.065033	Cannot reject normality
Omnibus Normality (CO-D)	3.4265	0.180278	Cannot reject normality
Skewness Normality (CO-D)	0.0000		
Kurtosis Normality (CO-D)		1.000000	Cannot reject normality
Omnibus Normality (CO-D)			
Variance-Ratio Equal-Variance Test	9999800001.00000.000000		Reject equal variances
Modified-Levene Equal-Variance Test	11.2960	0.003480	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CO-D	10	0.36	0.175	0.44
CO-D	10	0.175	0.175	0.175

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CO-D	80	135	105	10.66845
CO-D	20	75	105	10.66845

Number Sets of Ties = 2, Multiplicity Factor = 2790

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.8120	0.004923	Reject Ho	2.7652	0.005689	Reject Ho
Diff<0			2.8120	0.997539	Accept Ho	2.8589	0.997874	Accept Ho

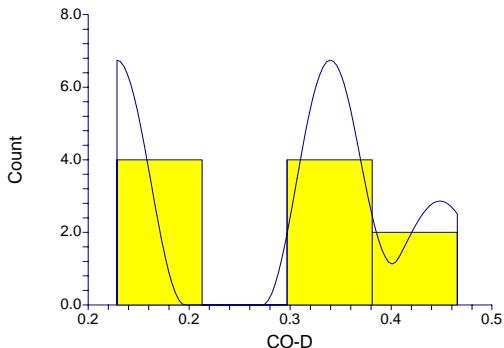
Diff>0	2.8120	0.002461	Reject Ho	2.7652	0.002845	Reject Ho
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Kolmogorov-Smirnov Test For Different Distributions

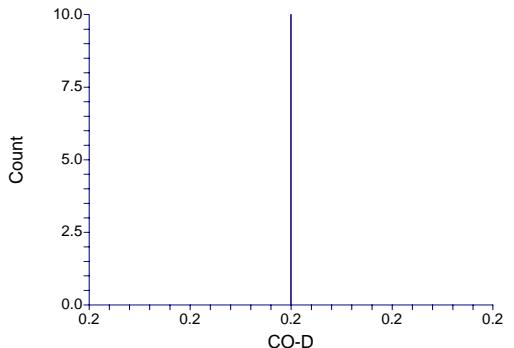
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.600000	0.5623	.050	Reject Ho	0.0524
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.600000	0.5623	.025	Reject Ho	

Plots Section

Histogram of CO-D



Histogram of CO-D

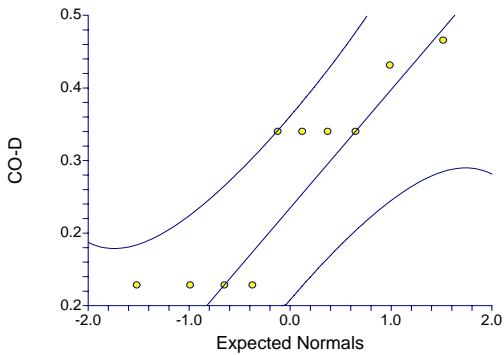


Two-Sample Test Report

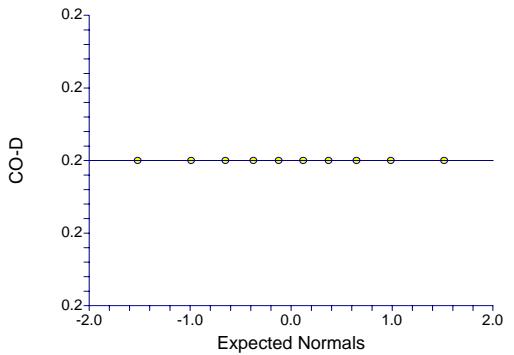
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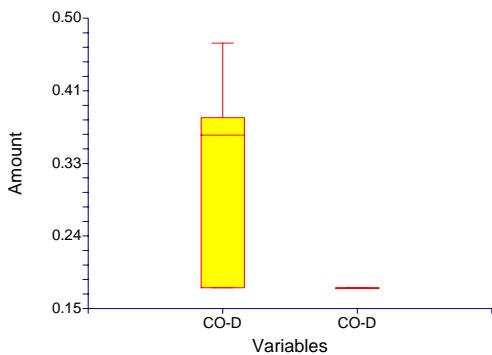
Normal Probability Plot of CO-D



Normal Probability Plot of CO-D



Box Plot



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
FE-D	10	306.2	135.0899	42.71918	209.5625	402.8375
FE-D	10	253.3	42.87722	13.55897	222.6275	283.9725

Note: T-alpha (FE-D) = 2.2622, T-alpha (FE-D) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	52.9	100.2191	44.81936	-41.26197	147.062
Unequal	10.80	52.9	141.7312	44.81936	-45.97563	151.7756

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2061

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1803	0.253247	Accept Ho	0.200948	0.066914
Difference < 0	1.1803	0.873377	Accept Ho	0.002698	0.000308
Difference > 0	1.1803	0.126623	Accept Ho	0.305424	0.108892
Difference: (FE-D)-(FE-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1803	0.263238	Accept Ho	0.189941	0.058970
Difference < 0	1.1803	0.868381	Accept Ho	0.002928	0.000367
Difference > 0	1.1803	0.131619	Accept Ho	0.295203	0.099036
Difference: (FE-D)-(FE-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (FE-D)	2.2944	0.021768	Reject normality
Kurtosis Normality (FE-D)	1.8508	0.064196	Cannot reject normality
Omnibus Normality (FE-D)	8.6898	0.012973	Reject normality
Skewness Normality (FE-D)	0.9535	0.340353	Cannot reject normality
Kurtosis Normality (FE-D)	-1.2607	0.207410	Cannot reject normality
Omnibus Normality (FE-D)	2.4985	0.286718	Cannot reject normality
Variance-Ratio Equal-Variance Test	9.9264	0.002143	Reject equal variances
Modified-Levene Equal-Variance Test	3.9015	0.063783	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
FE-D	10	264	197	381
FE-D	10	228.5	219	297

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
FE-D	56	111	105	13.22876
FE-D	44	99	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

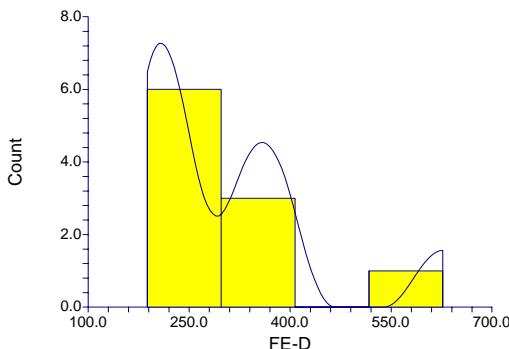
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value
Diff<>0	0.684211	Accept Ho	0.4536	0.650147	Accept Ho	0.4158
Diff<0	0.657895	Accept Ho	0.4536	0.674926	Accept Ho	0.4914
Diff>0	0.342105	Accept Ho	0.4536	0.325074	Accept Ho	0.4158

Kolmogorov-Smirnov Test For Different Distributions

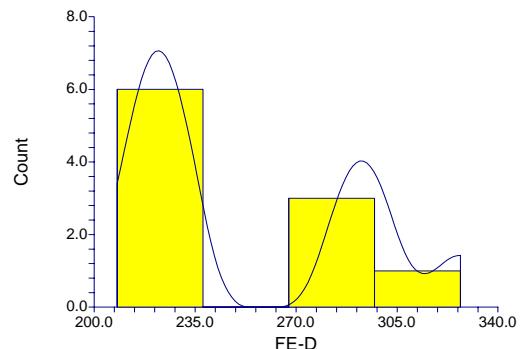
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.300000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

Histogram of FE-D

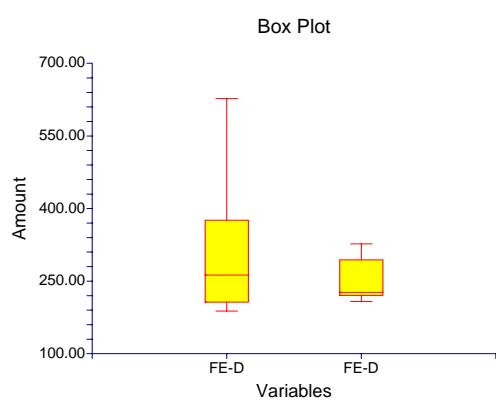
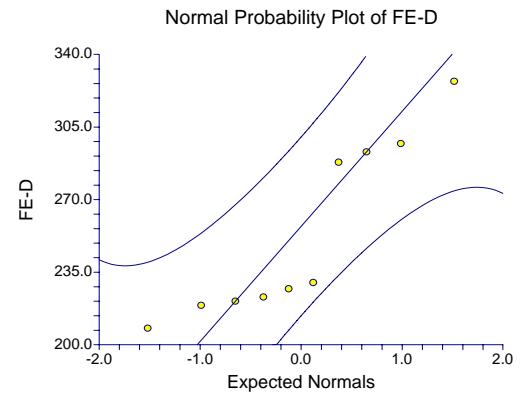
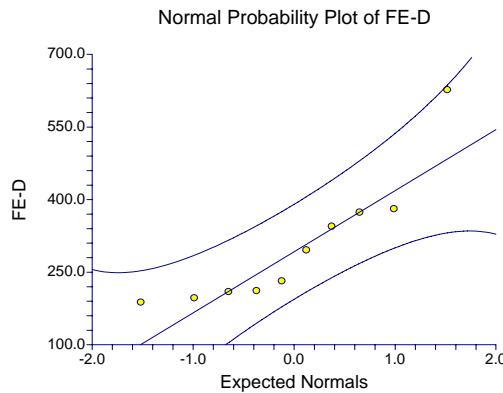


Histogram of FE-D



Two-Sample Test Report

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Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
PB-D	10	0.35	0.6517199	0.2060919	-0.1162124	0.8162124
PB-D	10	0.345	9.686761E-02	3.063223E-02	0.2757051	0.4142949

Note: T-alpha (PB-D) = 2.2622, T-alpha (PB-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.005	0.4658982	0.208356	-0.4327397	0.4427397
Unequal	9.40	0.005	0.6588795	0.208356	-0.4633127	0.4733126

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2477

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0240	0.981119	Accept Ho	0.050059	0.010018
Difference < 0	0.0240	0.509441	Accept Ho	0.047661	0.009421
Difference > 0	0.0240	0.490559	Accept Ho	0.052429	0.010609
Difference: (PB-D)-(PB-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0240	0.981357	Accept Ho	0.050054	0.010015
Difference < 0	0.0240	0.509322	Accept Ho	0.047738	0.009457
Difference > 0	0.0240	0.490678	Accept Ho	0.052346	0.010570
Difference: (PB-D)-(PB-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (PB-D)	3.9485	0.000079	Reject normality
Kurtosis Normality (PB-D)	3.5464	0.000391	Reject normality
Omnibus Normality (PB-D)	28.1675	0.000001	Reject normality
Skewness Normality (PB-D)	0.0104	0.991720	Cannot reject normality
Kurtosis Normality (PB-D)	-1.0937	0.274082	Cannot reject normality
Omnibus Normality (PB-D)	1.1963	0.549825	Cannot reject normality
Variance-Ratio Equal-Variance Test	45.2652	0.000004	Reject equal variances
Modified-Levene Equal-Variance Test	0.6275	0.438591	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
PB-D	10	0.1475	0.095	0.225
PB-D	10	0.355	0.23	0.46

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
PB-D	11.5	66.5	105	13.22378
PB-D	88.5	143.5	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-2.9114	0.003598	Reject Ho	-2.8736	0.004058	Reject Ho
Diff<0			-2.9114	0.001799	Reject Ho	-2.8736	0.002029	Reject Ho

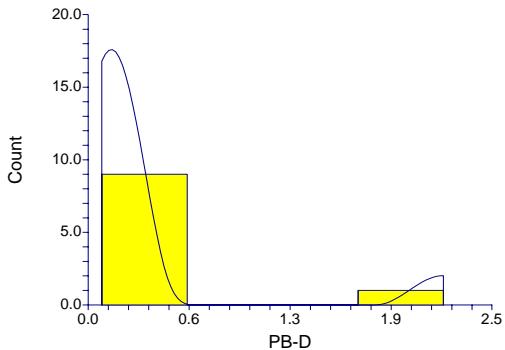
Diff>0	-2.9114	0.998201	Accept Ho	-2.9492	0.998407	Accept Ho
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Kolmogorov-Smirnov Test For Different Distributions

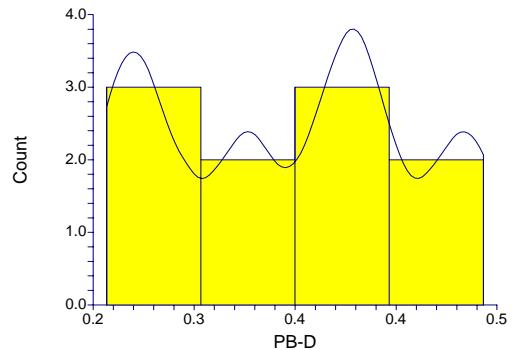
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.800000	0.5623	.050	Reject Ho	0.0021
D(1)<D(2)	0.800000	0.5623	.025	Reject Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

Histogram of PB-D



Histogram of PB-D

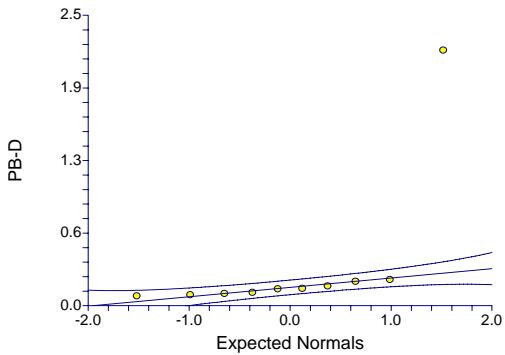


Two-Sample Test Report

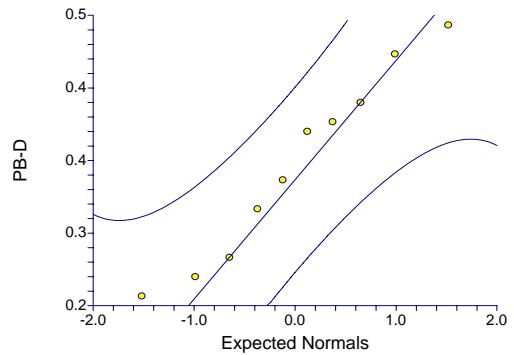
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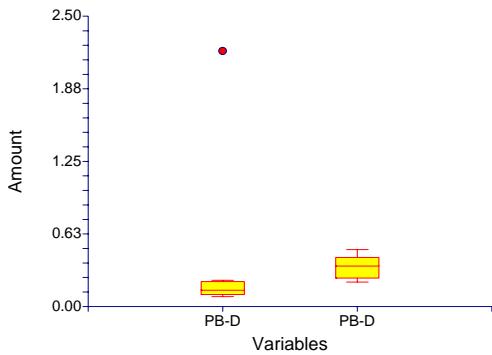
Normal Probability Plot of PB-D



Normal Probability Plot of PB-D



Box Plot



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MG	10	4630	471.593	149.1308	4292.643	4967.357
MG	10	4462	180.3577	57.0341	4332.98	4591.02

Note: T-alpha (MG) = 2.2622, T-alpha (MG) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	168	357.0216	159.6649	-167.4436	503.4436
Unequal	11.58	168	504.9048	159.6649	-181.2929	517.2929

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1877

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0522	0.306627	Accept Ho	0.169284	0.053179
Difference < 0	1.0522	0.846686	Accept Ho	0.003920	0.000475
Difference > 0	1.0522	0.153314	Accept Ho	0.263670	0.088354
Difference: (MG)-(MG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0522	0.314172	Accept Ho	0.162031	0.048240
Difference < 0	1.0522	0.842914	Accept Ho	0.004159	0.000540
Difference > 0	1.0522	0.157086	Accept Ho	0.256635	0.082060
Difference: (MG)-(MG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)

Skewness Normality (MG)	3.6234	0.000291	Reject normality
Kurtosis Normality (MG)	3.2907	0.000999	Reject normality
Omnibus Normality (MG)	23.9581	0.000006	Reject normality
Skewness Normality (MG)	0.7245	0.468775	Cannot reject normality
Kurtosis Normality (MG)	-0.3754	0.707364	Cannot reject normality
Omnibus Normality (MG)	0.6658	0.716847	Cannot reject normality
Variance-Ratio Equal-Variance Test	6.8370	0.008544	Reject equal variances
Modified-Levene Equal-Variance Test	0.5321	0.475100	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MG	10	4495	4400	4640
MG	10	4440	4270	4700

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MG	60.5	115.5	105	13.1939
MG	39.5	94.5	105	13.1939

Number Sets of Ties = 4, Multiplicity Factor = 42

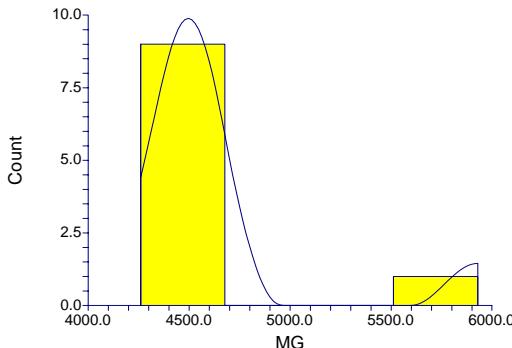
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.7958	0.426135	Accept Ho	0.7579	0.448495	Accept Ho
Diff<0			0.7958	0.786932	Accept Ho	0.8337	0.797780	Accept Ho
Diff>0			0.7958	0.213068	Accept Ho	0.7579	0.224248	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

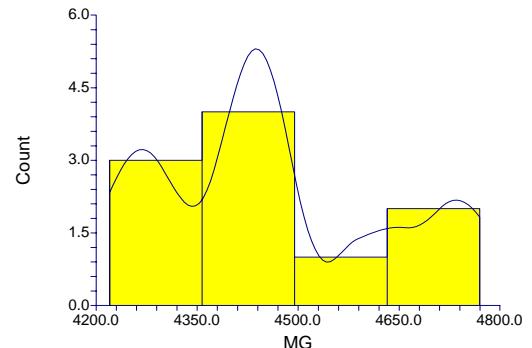
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

Histogram of MG

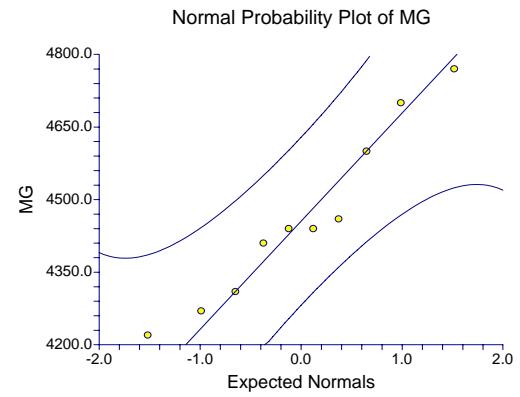
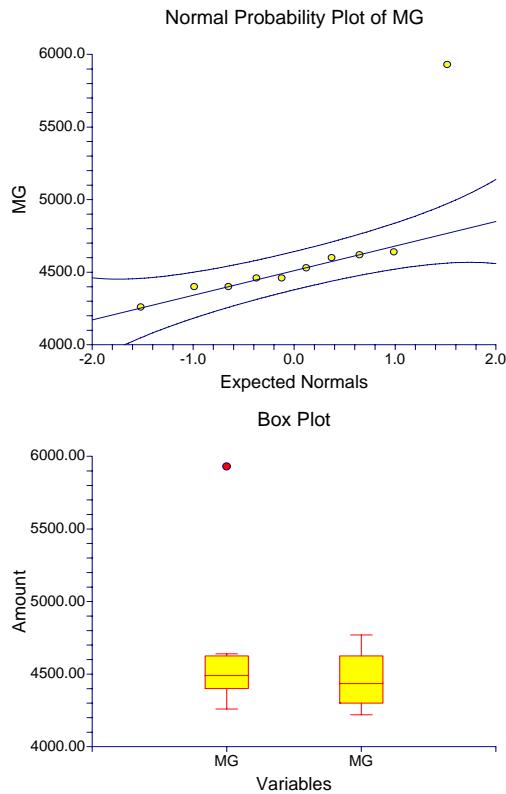


Histogram of MG



Two-Sample Test Report

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Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MN-D	10	60.68	12.1926	3.855639	51.95794	69.40206
MN-D	10	50.35	4.670058	1.476802	47.00924	53.69076

Note: T-alpha (MN-D) = 2.2622, T-alpha (MN-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	10.33	9.232253	4.128789	1.655736	19.00426
Unequal	11.59	10.33	13.05638	4.128789	1.298279	19.36172

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1875

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.5019	0.022218	Reject Ho	0.658000	0.381328
Difference < 0	2.5019	0.988891	Accept Ho	0.000025	0.000002
Difference > 0	2.5019	0.011109	Reject Ho	0.776769	0.495073
Difference: (MN-D)-(MN-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.5019	0.028439	Reject Ho	0.629916	0.335742
Difference < 0	2.5019	0.985781	Accept Ho	0.000030	0.000002
Difference > 0	2.5019	0.014219	Reject Ho	0.760241	0.454247
Difference: (MN-D)-(MN-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MN-D)	3.4521	0.000556	Reject normality
Kurtosis Normality (MN-D)	3.1278	0.001761	Reject normality
Omnibus Normality (MN-D)	21.6997	0.000019	Reject normality
Skewness Normality (MN-D)	1.6798	0.092987	Cannot reject normality
Kurtosis Normality (MN-D)	0.0463	0.963097	Cannot reject normality
Omnibus Normality (MN-D)	2.8240	0.243651	Cannot reject normality
Variance-Ratio Equal-Variance Test	6.8163	0.008637	Reject equal variances
Modified-Levene Equal-Variance Test	0.8610	0.365738	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MN-D	10	57.35	53.9	64
MN-D	10	48.3	46.5	56.3

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MN-D	86.5	141.5	105	13.21881
MN-D	13.5	68.5	105	13.21881

Number Sets of Ties = 2, Multiplicity Factor = 12

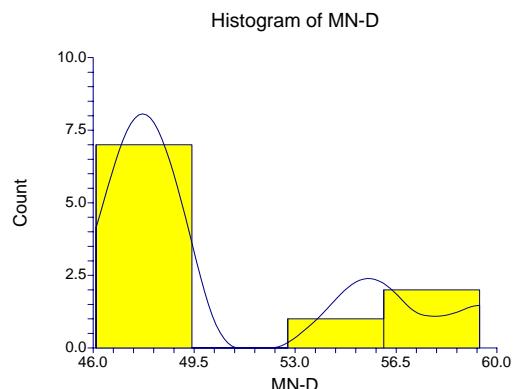
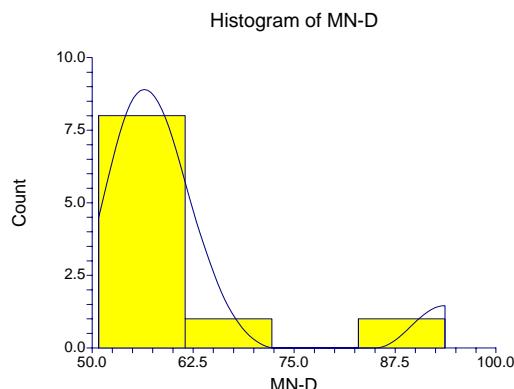
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.7612	0.005759	Reject Ho	2.7234	0.006462	Reject Ho
Diff<0			2.7612	0.997121	Accept Ho	2.7990	0.997437	Accept Ho

Diff>0	2.7612	0.002879	Reject Ho	2.7234	0.003231	Reject Ho
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Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.5623	.050	Reject Ho	0.0123
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.700000	0.5623	.025	Reject Ho	

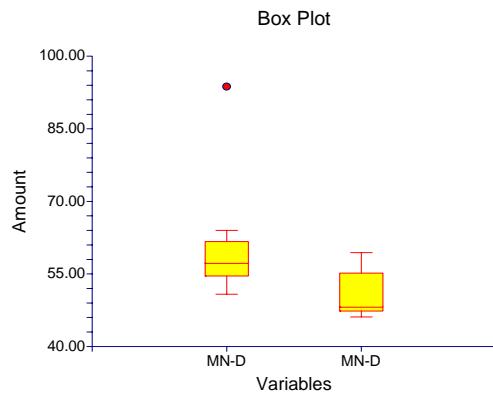
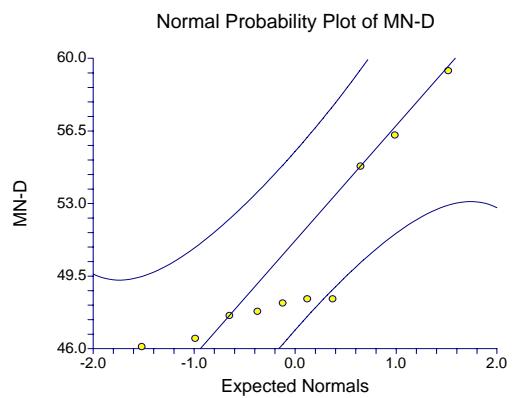
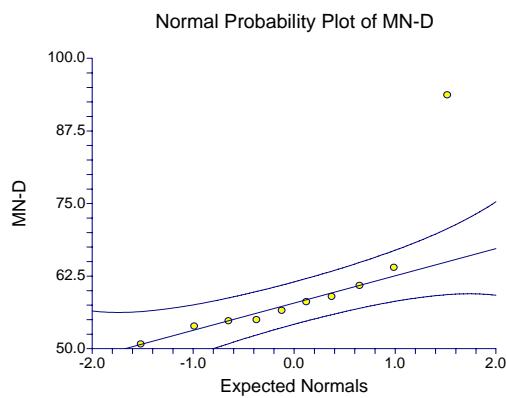
Plots Section



Two-Sample Test Report

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Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
HG-D	10	0.02335	1.533705E-02	0.00485	1.237854E-02	3.432146E-02
HG-D	10	0.03765	6.055762E-02	0.01915	-5.67031E-03	8.097031E-02

Note: T-alpha (HG-D) = 2.2622, T-alpha (HG-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.0143	4.417267E-02	1.975462E-02	-5.580292E-02	2.720292E-02
Unequal	10.15	-0.0143	6.246959E-02	1.975462E-02	-5.822812E-02	2.962812E-02

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2237

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.7239	0.478442	Accept Ho	0.105400	0.028317
Difference < 0	-0.7239	0.239221	Accept Ho	0.171575	0.048966
Difference > 0	-0.7239	0.760779	Accept Ho	0.009582	0.001353
Difference: (HG-D)-(HG-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.7239	0.485488	Accept Ho	0.100832	0.025689
Difference < 0	-0.7239	0.242744	Accept Ho	0.166411	0.045255
Difference > 0	-0.7239	0.757256	Accept Ho	0.010088	0.001516
Difference: (HG-D)-(HG-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)

Skewness Normality (HG-D)	3.9770	0.000070	Reject normality
Kurtosis Normality (HG-D)	3.5692	0.000358	Reject normality
Omnibus Normality (HG-D)	28.5559	0.000001	Reject normality
Skewness Normality (HG-D)	3.9770	0.000070	Reject normality
Kurtosis Normality (HG-D)	3.5692	0.000358	Reject normality
Omnibus Normality (HG-D)	28.5559	0.000001	Reject normality
Variance-Ratio Equal-Variance Test	15.5903	0.000360	Reject equal variances
Modified-Levene Equal-Variance Test	0.5240	0.478442	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
HG-D	10	0.0185	0.0185	0.0185
HG-D	10	0.0185	0.0185	0.0185

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
HG-D	49.5	104.5	105	6.892025
HG-D	50.5	105.5	105	6.892025

Number Sets of Ties = 1, Multiplicity Factor = 5814

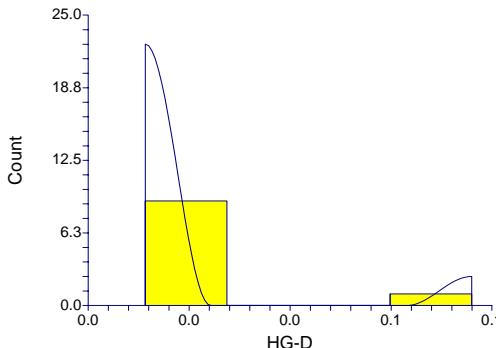
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.0725	0.942166	Accept Ho	0.0000	1.000000	Accept Ho
Diff<0			-0.0725	0.471083	Accept Ho	0.0000	0.500000	Accept Ho
Diff>0			-0.0725	0.528917	Accept Ho	-0.1451	0.557682	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

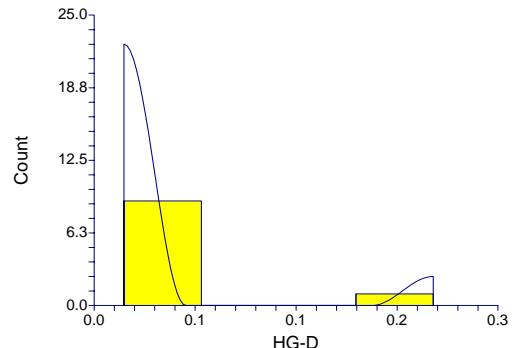
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.100000	0.5623	.050	Accept Ho	1.0000
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.000000	0.5623	.025	Accept Ho	

Plots Section

Histogram of HG-D

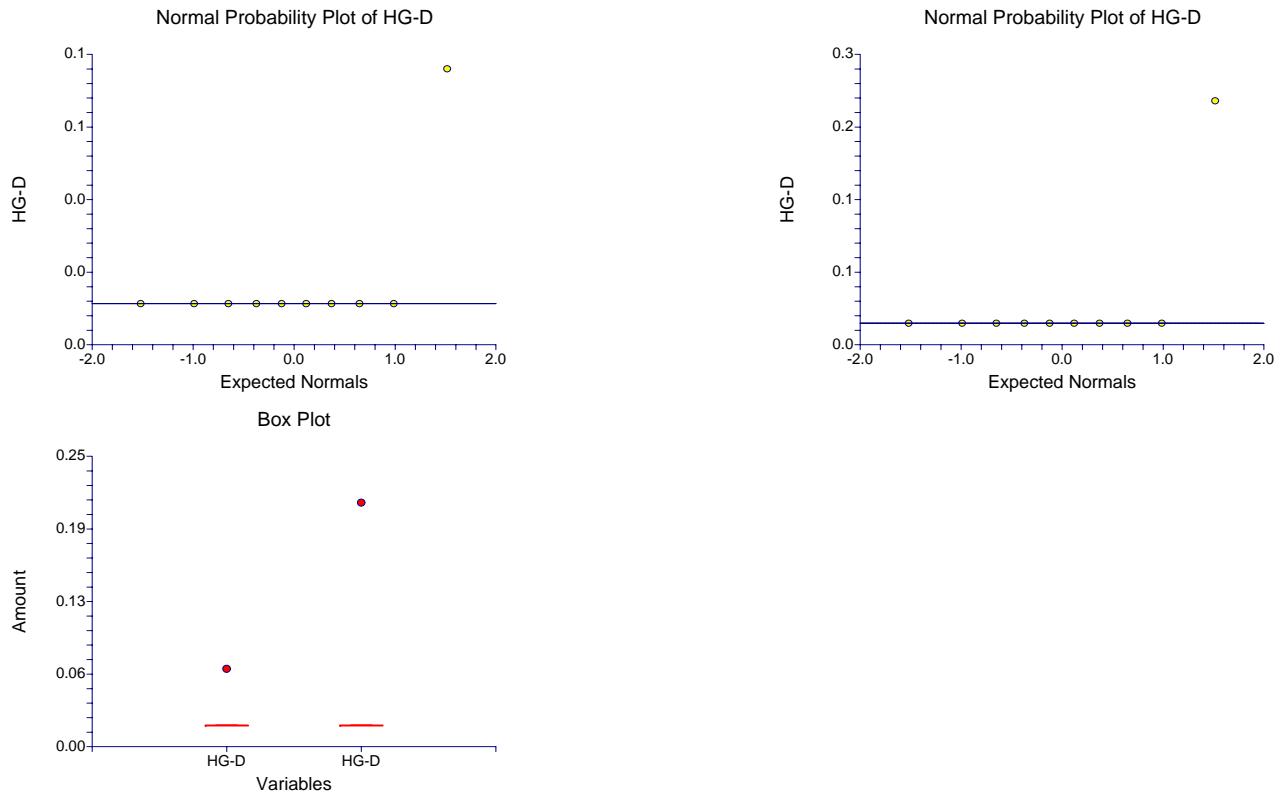


Histogram of HG-D



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MO-D	10	1.68	0.0421637	1.333333E-02	1.649838	1.710162
MO-D	10	1.83	0.1828782	5.783117E-02	1.699177	1.960823

Note: T-alpha (MO-D) = 2.2622, T-alpha (MO-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.15	0.1327069	5.934831E-02	-0.2746862	-2.531382E-02
Unequal	9.95	-0.15	0.1876758	5.934831E-02	-0.2823189	-1.768105E-02

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2295

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.5275	0.021069	Reject Ho	0.666796	0.390147
Difference < 0	-2.5275	0.010534	Reject Ho	0.784014	0.504447
Difference > 0	-2.5275	0.989466	Accept Ho	0.000022	0.000001
Difference: (MO-D)-(MO-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.5275	0.030099	Reject Ho	0.625452	0.323577
Difference < 0	-2.5275	0.015049	Reject Ho	0.759761	0.444491
Difference > 0	-2.5275	0.984951	Accept Ho	0.000029	0.000002
Difference: (MO-D)-(MO-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MO-D)	-2.4949	0.012600	Reject normality
Kurtosis Normality (MO-D)	1.1232	0.261366	Cannot reject normality
Omnibus Normality (MO-D)	7.4860	0.023683	Reject normality
Skewness Normality (MO-D)	-0.2179	0.827541	Cannot reject normality
Kurtosis Normality (MO-D)	-1.1533	0.248768	Cannot reject normality
Omnibus Normality (MO-D)	1.3777	0.502160	Cannot reject normality
Variance-Ratio Equal-Variance Test	18.8125	0.000167	Reject equal variances
Modified-Levene Equal-Variance Test	15.8438	0.000877	Reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MO-D	10	1.7	1.6	1.7
MO-D	10	1.85	1.6	2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MO-D	27	82	105	12.68547
MO-D	73	128	105	12.68547

Number Sets of Ties = 5, Multiplicity Factor = 642

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.8131	0.069817	Accept Ho	-1.7737	0.076116	Accept Ho
Diff<0			-1.8131	0.034908	Reject Ho	-1.7737	0.038058	Reject Ho

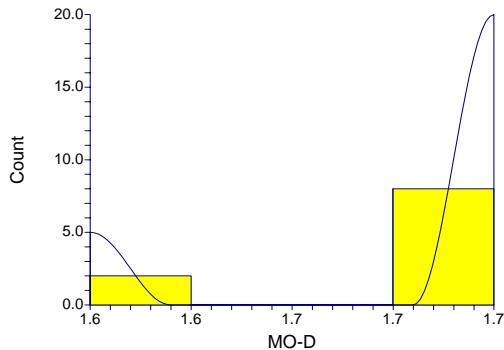
Diff>0	-1.8131	0.965092	Accept Ho	-1.8525	0.968024	Accept Ho
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Kolmogorov-Smirnov Test For Different Distributions

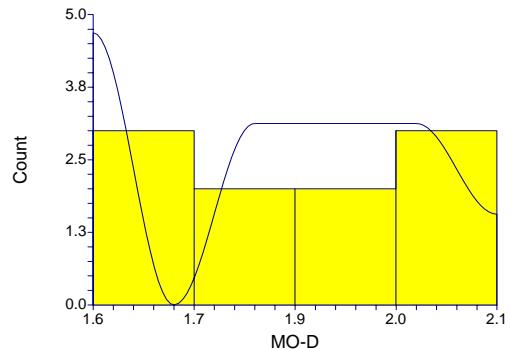
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.5623	.050	Reject Ho	0.0123
D(1)<D(2)	0.700000	0.5623	.025	Reject Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

Histogram of MO-D



Histogram of MO-D

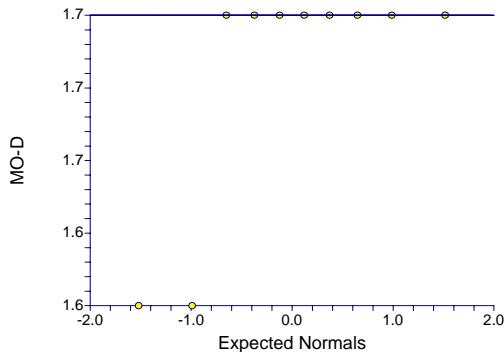


Two-Sample Test Report

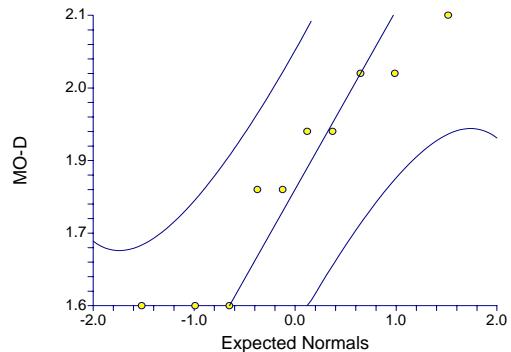
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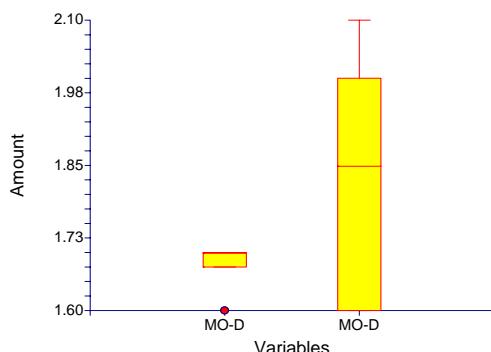
Normal Probability Plot of MO-D



Normal Probability Plot of MO-D



Box Plot



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NI-D	10	3.13	0.105935	3.349958E-02	3.054219	3.205781
NI-D	10	3.23	0.5250397	0.1660321	2.854409	3.605591

Note: T-alpha (NI-D) = 2.2622, T-alpha (NI-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.1	0.3787406	0.169378	-0.4558499	0.2558499
Unequal	9.73	-0.1	0.5356201	0.169378	-0.4788135	0.2788135

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2365

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.5904	0.562265	Accept Ho	0.086563	0.021737
Difference < 0	-0.5904	0.281133	Accept Ho	0.140869	0.037648
Difference > 0	-0.5904	0.718867	Accept Ho	0.013426	0.002020
Difference: (NI-D)-(NI-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.5904	0.568381	Accept Ho	0.083294	0.019960
Difference < 0	-0.5904	0.284191	Accept Ho	0.136834	0.034984
Difference > 0	-0.5904	0.715809	Accept Ho	0.014033	0.002229
Difference: (NI-D)-(NI-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)

Skewness Normality (NI-D)	-0.0635	0.949387	Cannot reject normality
Kurtosis Normality (NI-D)	-1.0363	0.300081	Cannot reject normality
Omnibus Normality (NI-D)	1.0779	0.583371	Cannot reject normality
Skewness Normality (NI-D)	3.7970	0.000146	Reject normality
Kurtosis Normality (NI-D)	3.4258	0.000613	Reject normality
Omnibus Normality (NI-D)	26.1532	0.000002	Reject normality
Variance-Ratio Equal-Variance Test	24.5644	0.000055	Reject equal variances
Modified-Levene Equal-Variance Test	0.8224	0.376466	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NI-D	10	3.15	3	3.2
NI-D	10	3.1	3	3.2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NI-D	59.5	114.5	105	12.77333
NI-D	40.5	95.5	105	12.77333

Number Sets of Ties = 3, Multiplicity Factor = 540

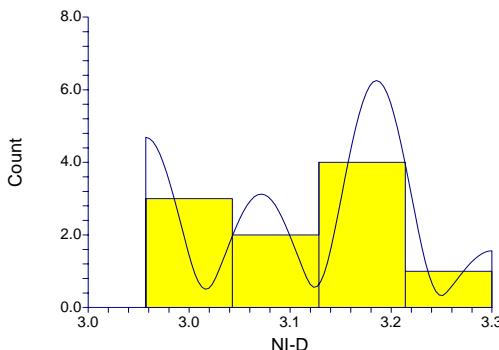
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.7437	0.457035	Accept Ho	0.7046	0.481063	Accept Ho
Diff<0			0.7437	0.771482	Accept Ho	0.7829	0.783152	Accept Ho
Diff>0			0.7437	0.228518	Accept Ho	0.7046	0.240532	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

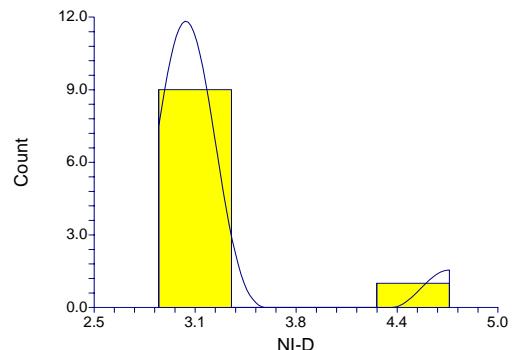
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

Histogram of NI-D

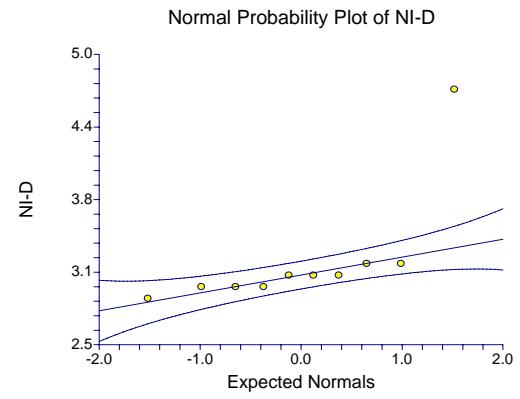
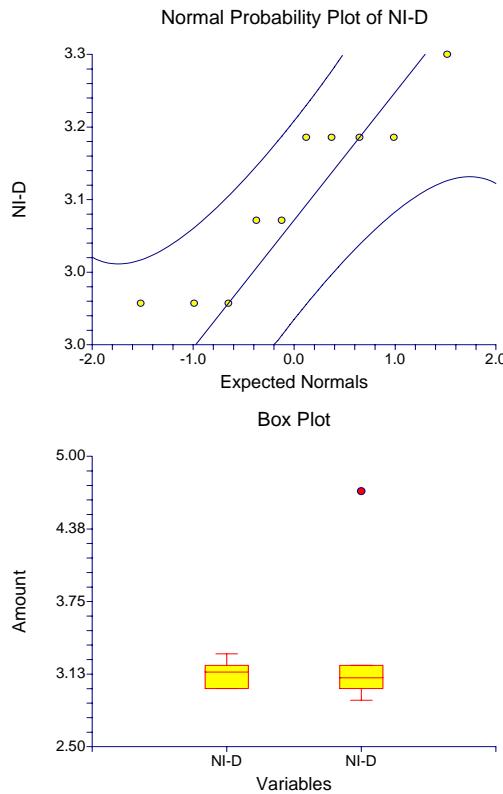


Histogram of NI-D



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
K-D	10	6755	349.6427	110.5667	6504.881	7005.119
K-D	10	6886	332.6727	105.2003	6648.021	7123.979

Note: T-alpha (K-D) = 2.2622, T-alpha (K-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-131	341.2632	152.6175	-451.6375	189.6375
Unequal	17.96	-131	482.619	152.6175	-451.6943	189.6943

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1013

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.8584	0.401982	Accept Ho	0.128530	0.036872
Difference < 0	-0.8584	0.200991	Accept Ho	0.206518	0.062957
Difference > 0	-0.8584	0.799009	Accept Ho	0.006719	0.000891
Difference: (K-D)-(K-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.8584	0.402010	Accept Ho	0.128509	0.036858
Difference < 0	-0.8584	0.201005	Accept Ho	0.206495	0.062939
Difference > 0	-0.8584	0.798995	Accept Ho	0.006720	0.000891
Difference: (K-D)-(K-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (K-D)	0.3038	0.761297	Cannot reject normality
Kurtosis Normality (K-D)	0.9197	0.357751	Cannot reject normality
Omnibus Normality (K-D)	0.9381	0.625611	Cannot reject normality
Skewness Normality (K-D)	-0.1819	0.855640	Cannot reject normality
Kurtosis Normality (K-D)	-0.8661	0.386420	Cannot reject normality
Omnibus Normality (K-D)	0.7833	0.675950	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.1046	0.884594	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0001	0.992031	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
K-D	10	6815	6380	6920
K-D	10	6890	6430	7290

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
K-D	40.5	95.5	105	13.20387
K-D	59.5	114.5	105	13.20387

Number Sets of Ties = 2, Multiplicity Factor = 30

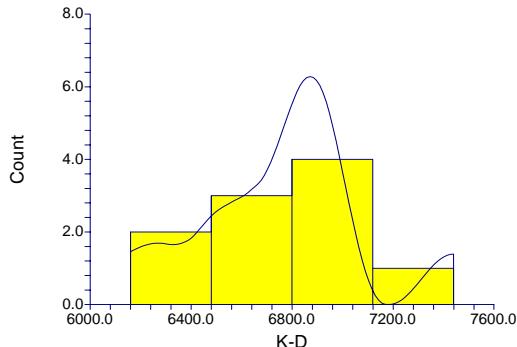
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value
Diff<>0			-0.7195	0.471841	Accept Ho	-0.6816
Diff<0			-0.7195	0.235921	Accept Ho	-0.6816
Diff>0			-0.7195	0.764079	Accept Ho	-0.7574

Kolmogorov-Smirnov Test For Different Distributions

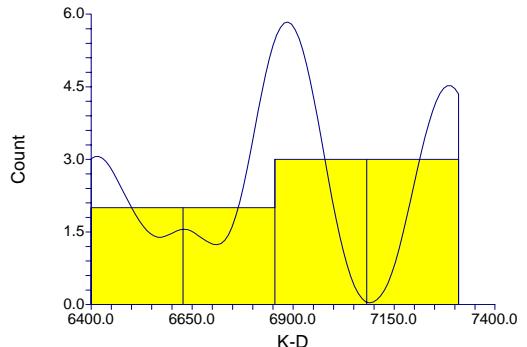
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

Histogram of K-D



Histogram of K-D

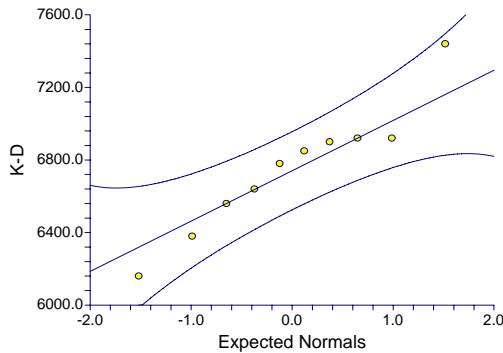


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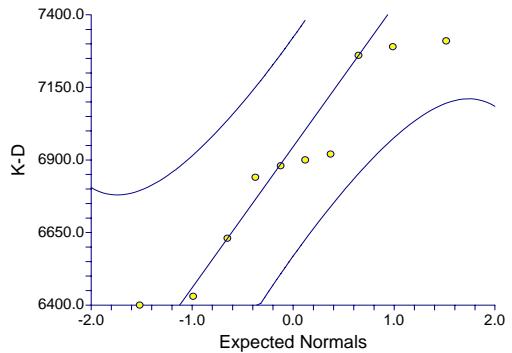
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Two-Sample Test Report

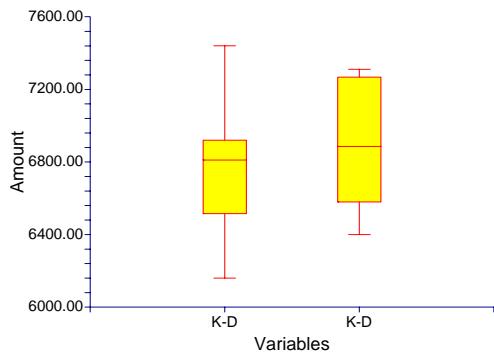
Normal Probability Plot of K-D



Normal Probability Plot of K-D



Box Plot



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SE-D	10	1.23	0.2637339	8.339997E-02	1.041336	1.418664
SE-D	10	1.53	0.5860413	0.1853225	1.110771	1.949229

Note: T-alpha (SE-D) = 2.2622, T-alpha (SE-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.3	0.4544227	0.203224	-0.7269578	0.1269578
Unequal	12.50	-0.3	0.6426508	0.203224	-0.740824	0.140824

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1692

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.4762	0.157170	Accept Ho	0.287437	0.109144
Difference < 0	-1.4762	0.078585	Accept Ho	0.411259	0.168823
Difference > 0	-1.4762	0.921415	Accept Ho	0.001078	0.000108
Difference: (SE-D)-(SE-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.4762	0.164629	Accept Ho	0.276037	0.099267
Difference < 0	-1.4762	0.082314	Accept Ho	0.401753	0.157485
Difference > 0	-1.4762	0.917686	Accept Ho	0.001160	0.000126
Difference: (SE-D)-(SE-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SE-D)	1.2576	0.208551	Cannot reject normality

Kurtosis Normality (SE-D)	0.3871	0.698697	Cannot reject normality
Omnibus Normality (SE-D)	1.7313	0.420780	Cannot reject normality
Skewness Normality (SE-D)	0.7960	0.426056	Cannot reject normality
Kurtosis Normality (SE-D)	0.6678	0.504250	Cannot reject normality
Omnibus Normality (SE-D)	1.0795	0.582885	Cannot reject normality
Variance-Ratio Equal-Variance Test	4.9377	0.026127	Reject equal variances
Modified-Levene Equal-Variance Test	2.7358	0.115458	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
SE-D	10	1.2	1	1.55
SE-D	10	1.475	0.75	2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
SE-D	32	87	105	13.21383
SE-D	68	123	105	13.21383

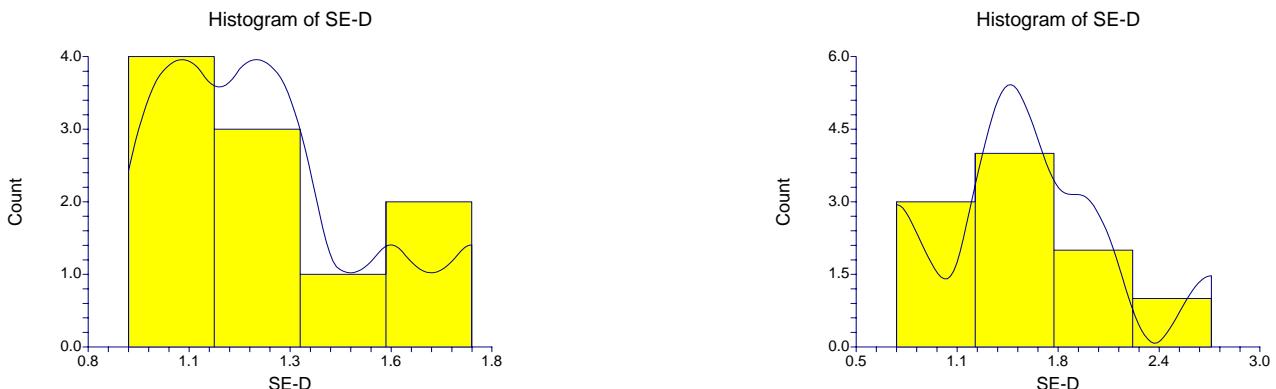
Number Sets of Ties = 3, Multiplicity Factor = 18

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.3622	0.173132	Accept Ho	-1.3244	0.185380	Accept Ho
Diff<0			-1.3622	0.086566	Accept Ho	-1.3244	0.092690	Accept Ho
Diff>0			-1.3622	0.913434	Accept Ho	-1.4000	0.919251	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

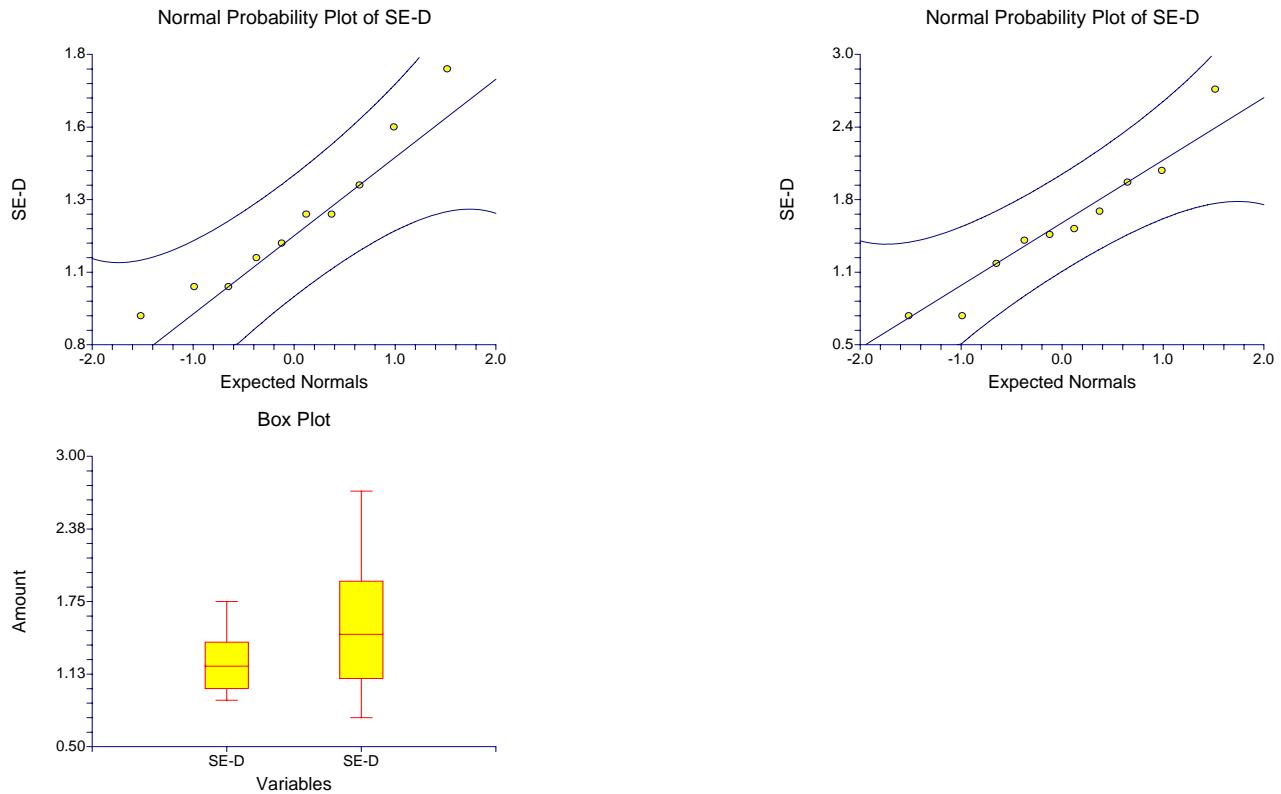
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	
D(1)<D(2)	0.500000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	0.1678

Plots Section



Two-Sample Test Report

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Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NA-D	10	62010	3094.242	978.4852	59796.51	64223.49
NA-D	10	58690	2513.718	794.9074	56891.79	60488.21

Note: T-alpha (NA-D) = 2.2622, T-alpha (NA-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	3320	2818.964	1260.679	671.412	5968.588
Unequal	17.28	3320	3986.616	1260.679	663.4235	5976.577

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1073

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.6335	0.016866	Reject Ho	0.702341	0.427363
Difference < 0	2.6335	0.991567	Accept Ho	0.000014	0.000001
Difference > 0	2.6335	0.008433	Reject Ho	0.812637	0.543327
Difference: (NA-D)-(NA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.6335	0.017266	Reject Ho	0.700248	0.423468
Difference < 0	2.6335	0.991367	Accept Ho	0.000014	0.000001
Difference > 0	2.6335	0.008633	Reject Ho	0.811474	0.540040
Difference: (NA-D)-(NA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NA-D)	-0.0919	0.926749	Cannot reject normality
Kurtosis Normality (NA-D)	0.2809	0.778812	Cannot reject normality
Omnibus Normality (NA-D)	0.0873	0.957270	Cannot reject normality
Skewness Normality (NA-D)	2.2255	0.026046	Reject normality
Kurtosis Normality (NA-D)	1.4881	0.136730	Cannot reject normality
Omnibus Normality (NA-D)	7.1674	0.027773	Reject normality
Variance-Ratio Equal-Variance Test	1.5152	0.545711	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.4352	0.517792	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NA-D	10	62050	58400	65200
NA-D	10	57700	56900	61500

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NA-D	79	134	105	13.22378
NA-D	21	76	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.1930	0.028306	Reject Ho	2.1552	0.031146	Reject Ho
Diff<0			2.1930	0.985847	Accept Ho	2.2308	0.987154	Accept Ho

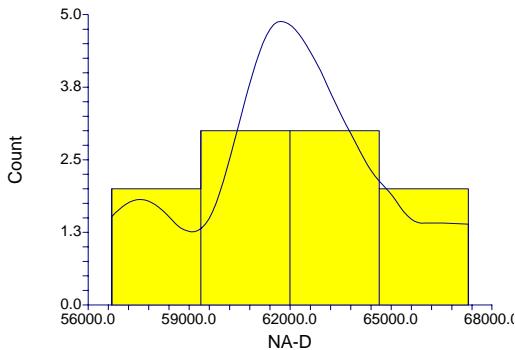
Diff>0	2.1930	0.014153	Reject Ho	2.1552	0.015573	Reject Ho
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Kolmogorov-Smirnov Test For Different Distributions

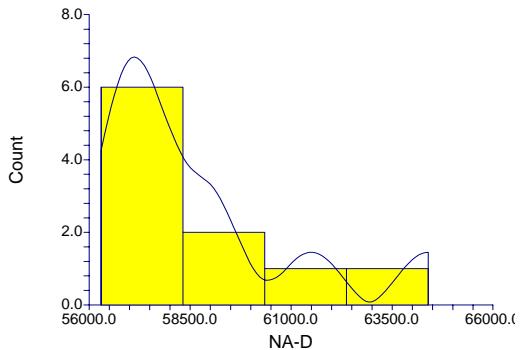
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)>D(2)	0.600000	0.5623	.050	Reject Ho	0.0524
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.600000	0.5623	.025	Reject Ho	

Plots Section

Histogram of NA-D



Histogram of NA-D

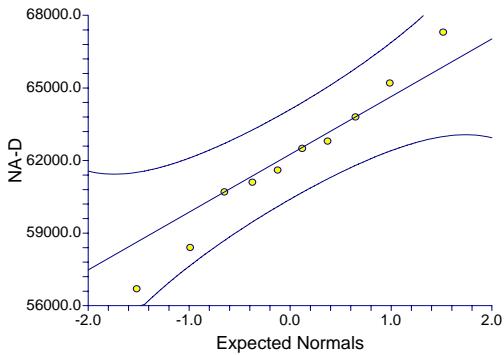


Two-Sample Test Report

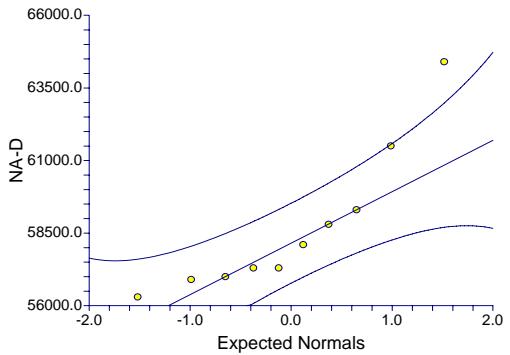
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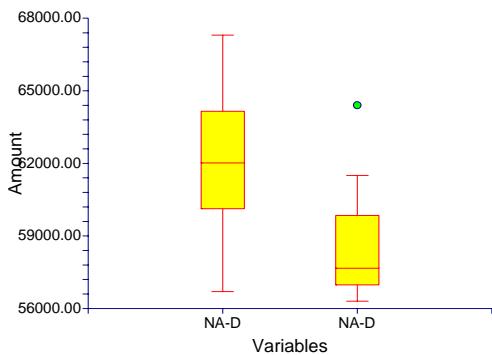
Normal Probability Plot of NA-D



Normal Probability Plot of NA-D



Box Plot



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TL-D	10	0.05005	0.1062982	3.361443E-02	-2.599114E-02	0.1260911
TL-D	10	0.04745	0.1204449	3.808802E-02	-3.871108E-02	0.1336111

Note: T-alpha (TL-D) = 2.2622, T-alpha (TL-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.0026	0.113592	5.079987E-02	-0.1041266	0.1093266
Unequal	17.73	0.0026	0.1606433	5.079987E-02	-0.1042449	0.1094449

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1033

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0512	0.959745	Accept Ho	0.050270	0.010081
Difference < 0	0.0512	0.520128	Accept Ho	0.045118	0.008801
Difference > 0	0.0512	0.479872	Accept Ho	0.055293	0.011339
Difference: (TL-D)-(TL-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0512	0.959753	Accept Ho	0.050269	0.010081
Difference < 0	0.0512	0.520123	Accept Ho	0.045121	0.008803
Difference > 0	0.0512	0.479877	Accept Ho	0.055290	0.011337
Difference: (TL-D)-(TL-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)

Skewness Normality (TL-D)	3.8859	0.000102	Reject normality
Kurtosis Normality (TL-D)	3.4934	0.000477	Reject normality
Omnibus Normality (TL-D)	27.3036	0.000001	Reject normality
Skewness Normality (TL-D)	3.9693	0.000072	Reject normality
Kurtosis Normality (TL-D)	3.5630	0.000367	Reject normality
Omnibus Normality (TL-D)	28.4505	0.000001	Reject normality
Variance-Ratio Equal-Variance Test	1.2839	0.715765	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0013	0.971880	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TL-D	10	0.01175	0.0065	0.043
TL-D	10	0.007	0.0065	0.02

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TL-D	59	114	105	12.61787
TL-D	41	96	105	12.61787

Number Sets of Ties = 1, Multiplicity Factor = 720

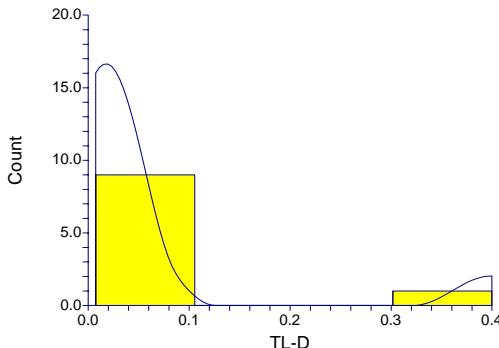
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.7133	0.475676	Accept Ho	0.6736	0.500535	Accept Ho
Diff<0			0.7133	0.762162	Accept Ho	0.7529	0.774245	Accept Ho
Diff>0			0.7133	0.237838	Accept Ho	0.6736	0.250268	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

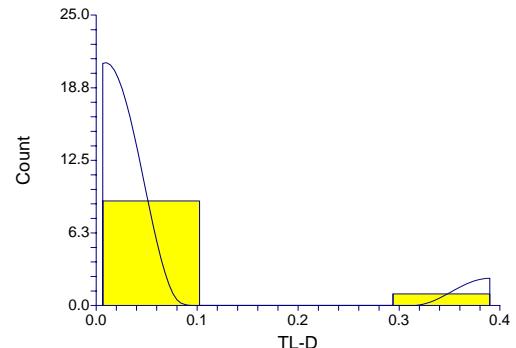
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

Histogram of TL-D

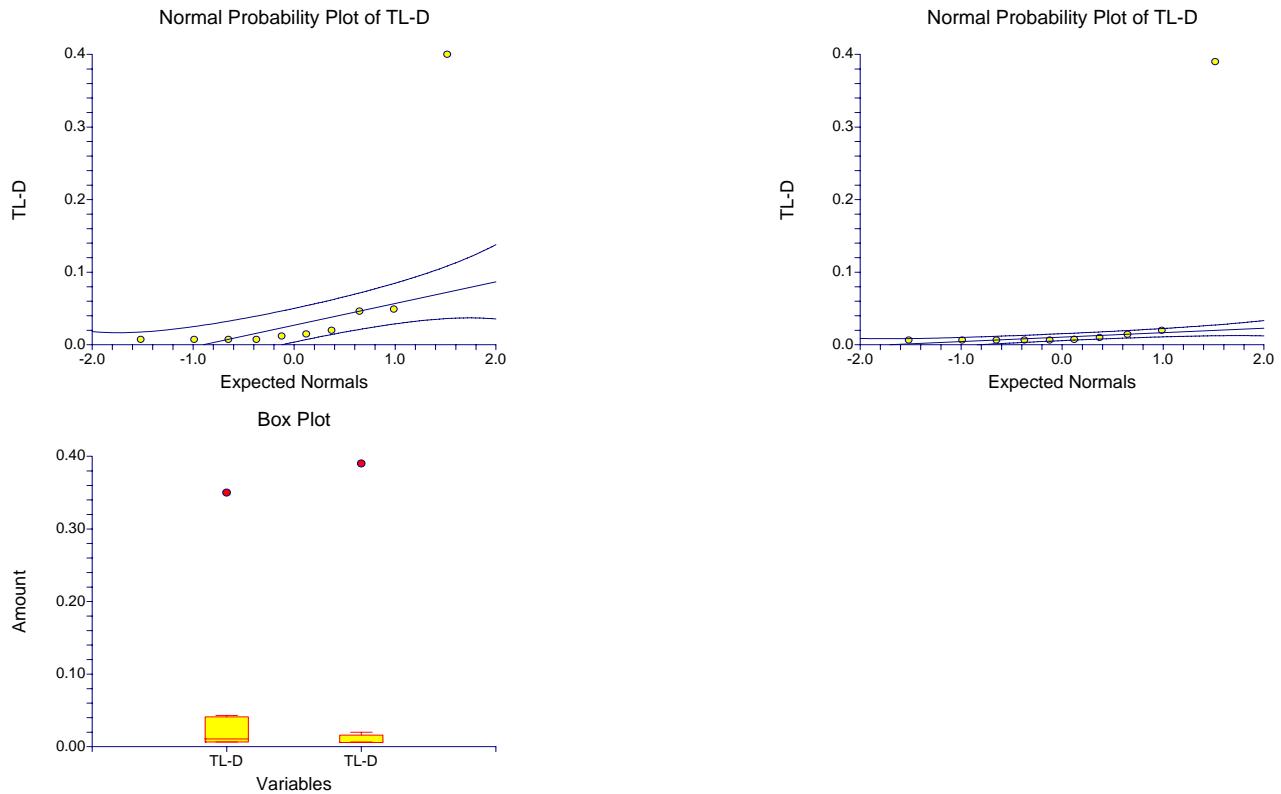


Histogram of TL-D



Two-Sample Test Report

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Two-Sample Test Report

Page 1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U-D	10	0.00375	3.80971E-03	1.204736E-03	1.024698E-03	6.475302E-03
U-D	10	0.0103	7.710743E-03	2.438351E-03	4.784067E-03	1.581593E-02

Note: T-alpha (U-D) = 2.2622, T-alpha (U-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.00655	6.081507E-03	2.719732E-03	-1.226395E-02	-8.360542E-04
Unequal	13.15	-0.00655	8.600549E-03	2.719732E-03	-1.241896E-02	-6.81043E-04

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1579

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.4083	0.026962	Reject Ho	0.625007	0.349508
Difference < 0	-2.4083	0.013481	Reject Ho	0.749023	0.460724
Difference > 0	-2.4083	0.986519	Accept Ho	0.000036	0.000002
Difference: (U-D)-(U-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.4083	0.031399	Reject Ho	0.606598	0.320919
Difference < 0	-2.4083	0.015699	Reject Ho	0.737868	0.434715
Difference > 0	-2.4083	0.984301	Accept Ho	0.000041	0.000003
Difference: (U-D)-(U-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U-D)	3.0268	0.002472	Reject normality
Kurtosis Normality (U-D)	2.5797	0.009889	Reject normality
Omnibus Normality (U-D)	15.8162	0.000368	Reject normality
Skewness Normality (U-D)	-0.5483	0.583507	Cannot reject normality
Kurtosis Normality (U-D)	-2.6017	0.009277	Reject normality
Omnibus Normality (U-D)	7.0694	0.029168	Reject normality
Variance-Ratio Equal-Variance Test	4.0965	0.047398	Reject equal variances
Modified-Levene Equal-Variance Test	4.5141	0.047726	Reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U-D	10	0.002	0.0015	0.0065
U-D	10	0.014	0.0015	0.018

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U-D	31	86	105	12.61265
U-D	69	124	105	12.61265

Number Sets of Ties = 2, Multiplicity Factor = 726

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.5064	0.131958	Accept Ho	-1.4668	0.142436	Accept Ho
Diff<0			-1.5064	0.065979	Accept Ho	-1.4668	0.071218	Accept Ho

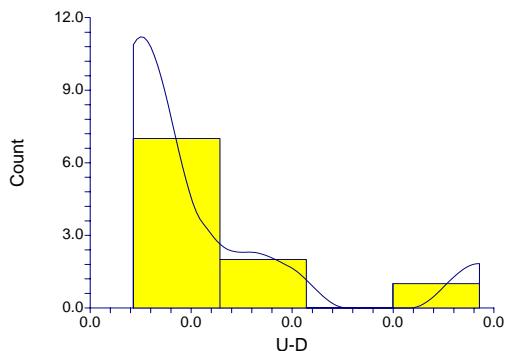
Diff>0	-1.5064	0.934021	Accept Ho	-1.5461	0.938956	Accept Ho
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Kolmogorov-Smirnov Test For Different Distributions

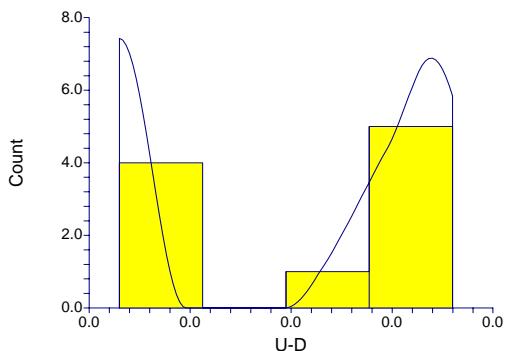
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.500000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.000000	0.5623	.025	Accept Ho	

Plots Section

Histogram of U-D



Histogram of U-D

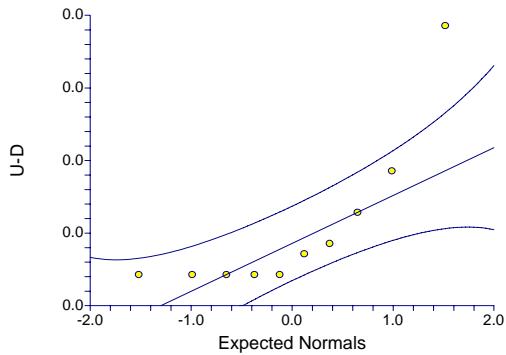


Two-Sample Test Report

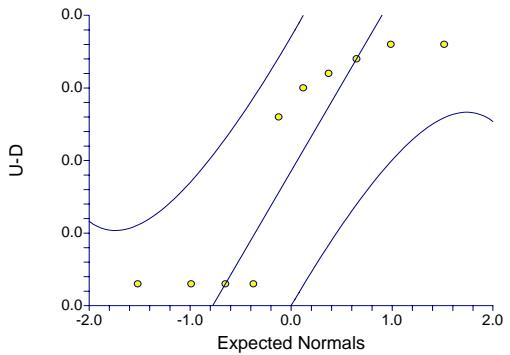
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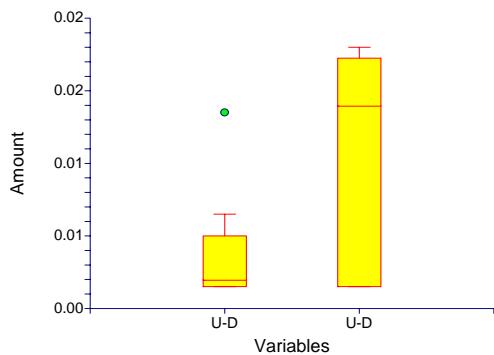
Normal Probability Plot of U-D



Normal Probability Plot of U-D



Box Plot



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
V	10	1.392	2.921513	0.9238636	-0.6979247	3.481925
V	10	1.3945	0.9037805	0.2858005	0.7479744	2.041026

Note: T-alpha (V) = 2.2622, T-alpha (V) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.0025	2.162413	0.9670604	-2.034219	2.029219
Unequal	10.71	-0.0025	3.058114	0.9670604	-2.138115	2.133115

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2084

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0026	0.997966	Accept Ho	0.050001	0.010000
Difference < 0	-0.0026	0.498983	Accept Ho	0.050257	0.010064
Difference > 0	-0.0026	0.501017	Accept Ho	0.049744	0.009936
Difference: (V)-(V)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0026	0.997985	Accept Ho	0.050001	0.010000
Difference < 0	-0.0026	0.498992	Accept Ho	0.050251	0.010061
Difference > 0	-0.0026	0.501008	Accept Ho	0.049750	0.009939
Difference: (V)-(V)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)

Skewness Normality (V)	3.8474	0.000119	Reject normality
Kurtosis Normality (V)	3.4530	0.000554	Reject normality
Omnibus Normality (V)	26.7251	0.000002	Reject normality
Skewness Normality (V)	-0.0532	0.957581	Cannot reject normality
Kurtosis Normality (V)	-1.5172	0.129213	Cannot reject normality
Omnibus Normality (V)	2.3048	0.315884	Cannot reject normality
Variance-Ratio Equal-Variance Test	10.4494	0.001759	Reject equal variances
Modified-Levene Equal-Variance Test	0.0978	0.758040	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
V	10	0.315	0.315	1.8
V	10	1.525	0.315	2.25

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
V	27	82	105	12.08522
V	73	128	105	12.08522

Number Sets of Ties = 1, Multiplicity Factor = 1320

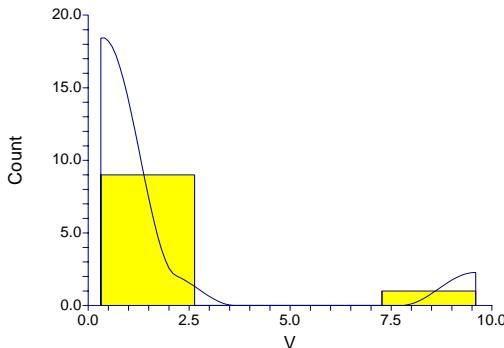
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.9032	0.057021	Accept Ho	-1.8618	0.062634	Accept Ho
Diff<0			-1.9032	0.028510	Reject Ho	-1.8618	0.031317	Reject Ho
Diff>0			-1.9032	0.971490	Accept Ho	-1.9445	0.974084	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

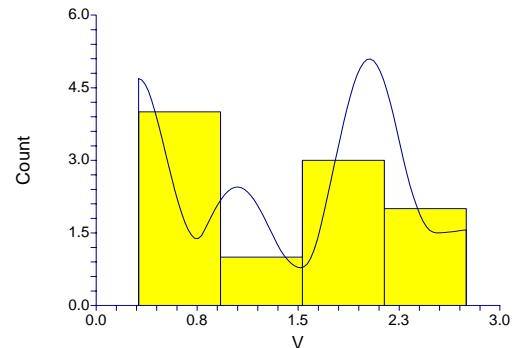
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.500000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

Histogram of V

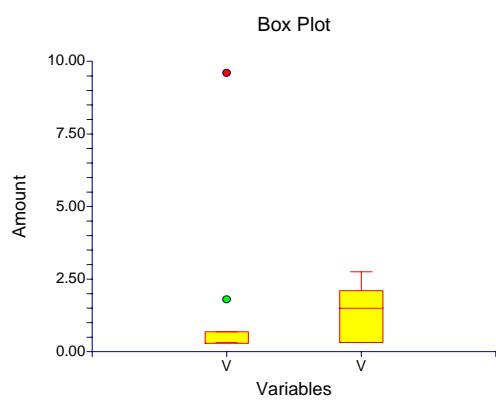
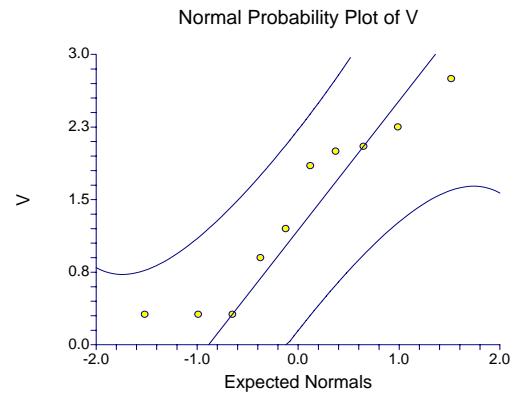
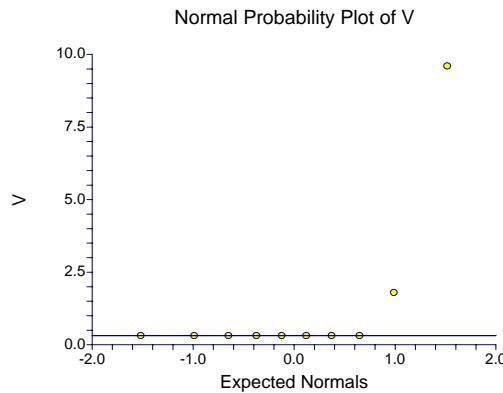


Histogram of V



Two-Sample Test Report

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Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZN-D	10	3.785	0.9798101	0.3098432	3.084086	4.485914
ZN-D	10	7.115	4.503644	1.424177	3.893287	10.33671

Note: T-alpha (ZN-D) = 2.2622, T-alpha (ZN-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-3.33	3.259052	1.457492	-6.392077	-0.2679226
Unequal	9.85	-3.33	4.608995	1.457492	-6.584208	-7.579254E-02

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2327

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.2847	0.034681	Reject Ho	0.580046	0.309086
Difference < 0	-2.2847	0.017341	Reject Ho	0.709772	0.415854
Difference > 0	-2.2847	0.982659	Accept Ho	0.000059	0.000004
Difference: (ZN-D)-(ZN-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.2847	0.045795	Reject Ho	0.539895	0.254071
Difference < 0	-2.2847	0.022898	Reject Ho	0.684068	0.363052
Difference > 0	-2.2847	0.977102	Accept Ho	0.000076	0.000007
Difference: (ZN-D)-(ZN-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZN-D)	2.3539	0.018578	Reject normality
Kurtosis Normality (ZN-D)	1.8260	0.067849	Cannot reject normality
Omnibus Normality (ZN-D)	8.8751	0.011825	Reject normality
Skewness Normality (ZN-D)	0.8770	0.380499	Cannot reject normality
Kurtosis Normality (ZN-D)	-1.8958	0.057980	Cannot reject normality
Omnibus Normality (ZN-D)	4.3633	0.112854	Cannot reject normality
Variance-Ratio Equal-Variance Test	21.1273	0.000103	Reject equal variances
Modified-Levene Equal-Variance Test	5.3884	0.032208	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZN-D	10	3.425	3.1	4.65
ZN-D	10	4.325	3.3	12.7

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZN-D	27	82	105	13.22378
ZN-D	73	128	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

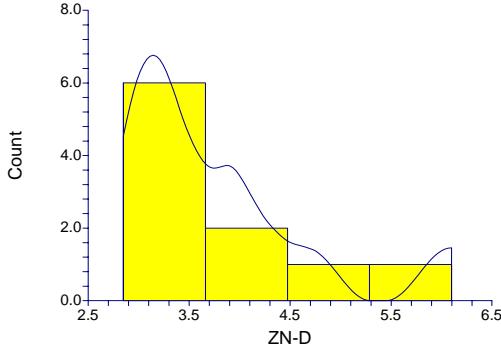
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.7393	0.081984	Accept Ho	-1.7015	0.088853	Accept Ho
Diff<0			-1.7393	0.040992	Reject Ho	-1.7015	0.044426	Reject Ho
Diff>0			-1.7393	0.959008	Accept Ho	-1.7771	0.962224	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

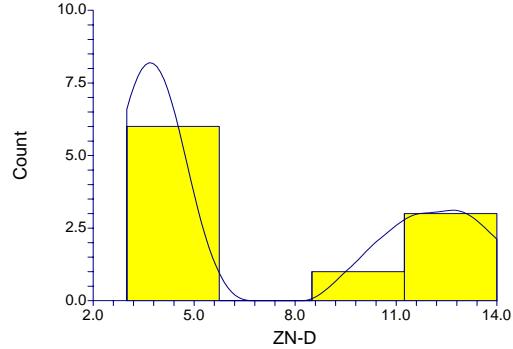
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.400000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.000000	0.5623	.025	Accept Ho	

Plots Section

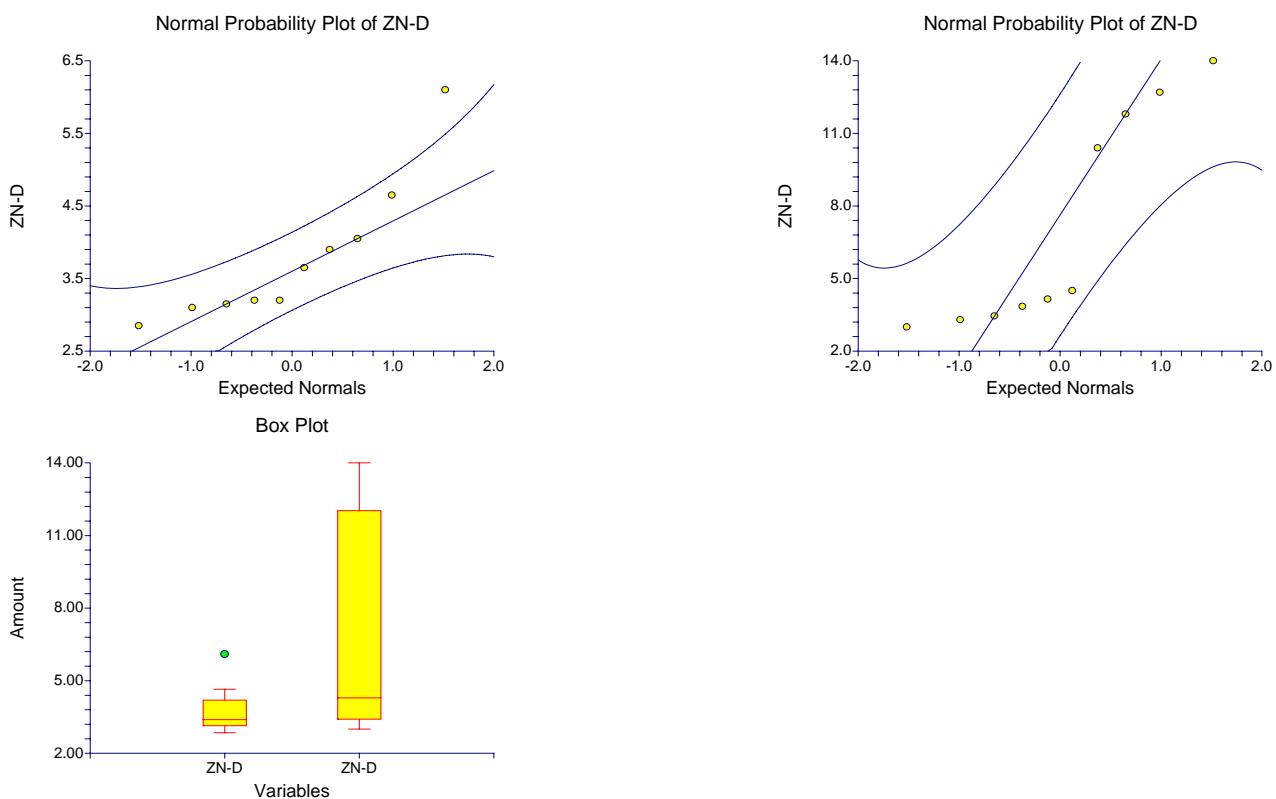
Histogram of ZN-D



Histogram of ZN-D



Two-Sample Test Report



Two-Sample Test Report

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZR-D	10	0.3035	0.277319	8.769597E-02	0.1051179	0.5018821
ZR-D	10	0.2498	0.3382762	0.1069723	7.811783E-03	0.4917882

Note: T-alpha (ZR-D) = 2.2622, T-alpha (ZD-D) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.0537	0.309303	0.1383245	-0.236909	0.3443089
Unequal	17.33	0.0537	0.4374204	0.1383245	-0.2377122	0.3451122

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1067

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3882	0.702408	Accept Ho	0.065648	0.014851
Difference < 0	0.3882	0.648796	Accept Ho	0.021752	0.003604
Difference > 0	0.3882	0.351204	Accept Ho	0.101858	0.024644
Difference: (ZR-D)-(ZR-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3882	0.702582	Accept Ho	0.065583	0.014816
Difference < 0	0.3882	0.648709	Accept Ho	0.021780	0.003615
Difference > 0	0.3882	0.351291	Accept Ho	0.101761	0.024585
Difference: (ZR-D)-(ZR-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZR-D)	1.4553	0.145573	Cannot reject normality
Kurtosis Normality (ZR-D)	-0.9005	0.367849	Cannot reject normality
Omnibus Normality (ZR-D)	2.9290	0.231199	Cannot reject normality
Skewness Normality (ZR-D)	2.9434	0.003246	Reject normality
Kurtosis Normality (ZR-D)	2.4125	0.015843	Reject normality
Omnibus Normality (ZR-D)	14.4840	0.000716	Reject normality
Variance-Ratio Equal-Variance Test	1.4879	0.563298	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0002	0.989210	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZR-D	10	0.1625	0.08	0.7
ZR-D	10	0.1075	0.0475	0.55

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZR-D	67	122	105	13.22876
ZR-D	33	88	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

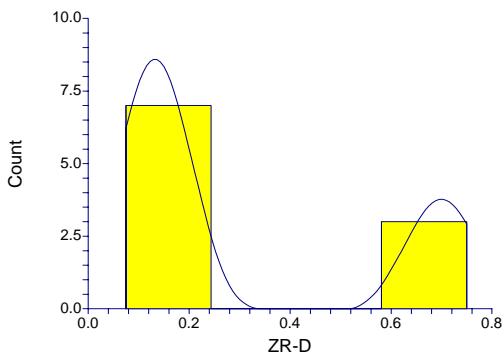
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.217563	Accept Ho	1.2851	0.198765	Accept Ho	1.2473	0.212294	Accept Ho
Diff<0	0.891219	Accept Ho	1.2851	0.900618	Accept Ho	1.3229	0.907062	Accept Ho
Diff>0	0.108781	Accept Ho	1.2851	0.099382	Accept Ho	1.2473	0.106147	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

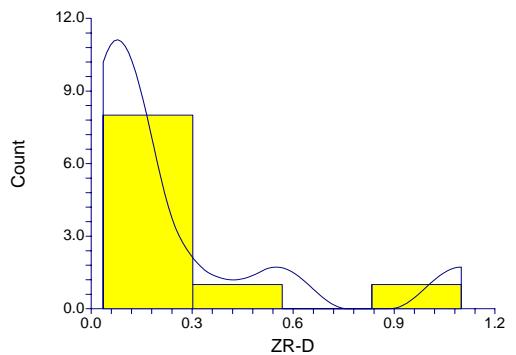
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

Histogram of ZR-D

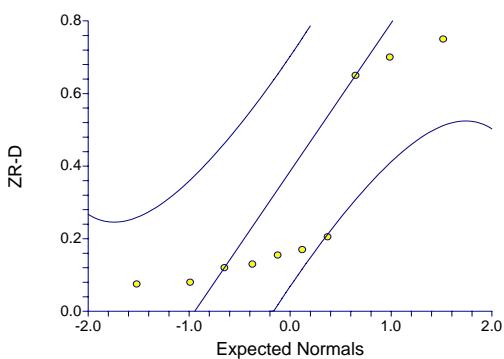


Histogram of ZR-D

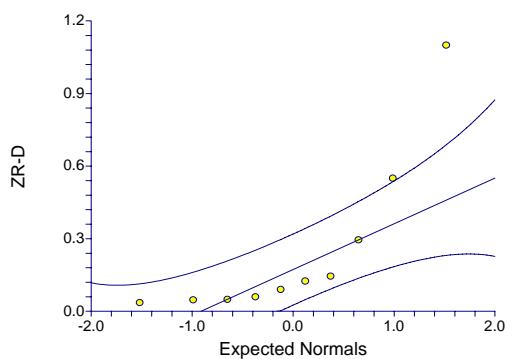


Two-Sample Test Report

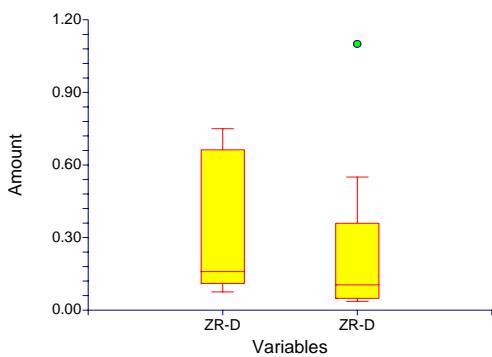
Normal Probability Plot of ZR-D



Normal Probability Plot of ZR-D



Box Plot



Two-Sample Test Report

Page 1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MEK	10	0.022115	2.011644E-02	6.361377E-03	7.724566E-03	3.650543E-02
MEK	10	0.002478	2.944988E-03	9.312868E-04	3.712829E-04	4.584717E-03

Note: T-alpha (MEK) = 2.2622, T-alpha (MEK) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.019637	1.437609E-02	6.429184E-03	6.129785E-03	3.314421E-02
Unequal	9.39	0.019637	2.033086E-02	6.429184E-03	5.183751E-03	3.409025E-02

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2481

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.0544	0.006827	Reject Ho	0.823312	0.578024
Difference < 0	3.0544	0.996586	Accept Ho	0.000002	0.000000
Difference > 0	3.0544	0.003414	Reject Ho	0.901761	0.690092
Difference: (MEK)-(MEK)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.0544	0.013056	Reject Ho	0.779905	0.478426
Difference < 0	3.0544	0.993472	Accept Ho	0.000003	0.000000
Difference > 0	3.0544	0.006528	Reject Ho	0.880815	0.611962
Difference: (MEK)-(MEK)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MEK)	1.7908	0.073325	Cannot reject normality
Kurtosis Normality (MEK)	0.9769	0.328594	Cannot reject normality
Omnibus Normality (MEK)	4.1614	0.124842	Cannot reject normality
Skewness Normality (MEK)	2.1683	0.030133	Reject normality
Kurtosis Normality (MEK)	1.2293	0.218965	Cannot reject normality
Omnibus Normality (MEK)	6.2128	0.044761	Reject normality
Variance-Ratio Equal-Variance Test	46.6590	0.000004	Reject equal variances
Modified-Levene Equal-Variance Test	7.5144	0.013421	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MEK	10	0.0135	0.0064	0.038
MEK	10	0.000825	0.0005	0.006

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MEK	94	149	105	13.20885
MEK	6	61	105	13.20885

Number Sets of Ties = 1, Multiplicity Factor = 24

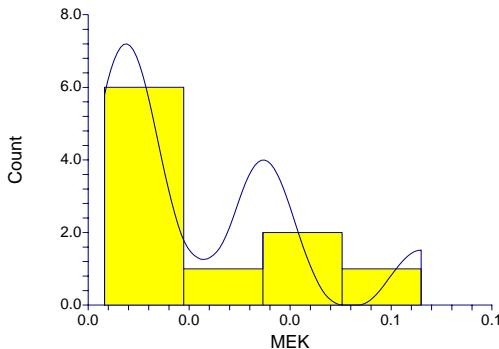
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value
Diff<>0			3.3311	0.000865	Reject Ho	3.2932
Diff<0			3.3311	0.999567	Accept Ho	3.3690
Diff>0			3.3311	0.000433	Reject Ho	3.2932

Kolmogorov-Smirnov Test For Different Distributions

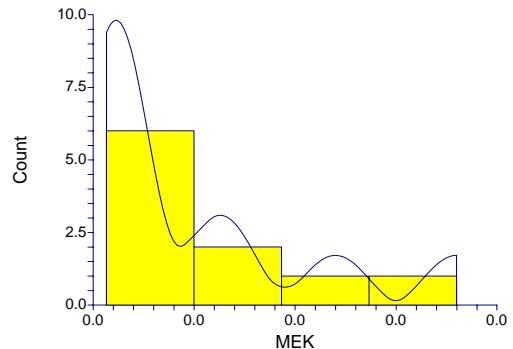
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.800000	0.5623	.050	Reject Ho	0.0021
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.800000	0.5623	.025	Reject Ho	

Plots Section

Histogram of MEK



Histogram of MEK

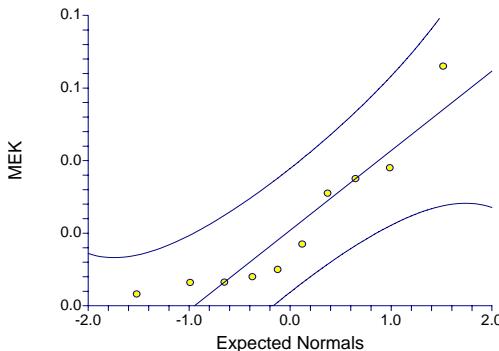


Two-Sample Test Report

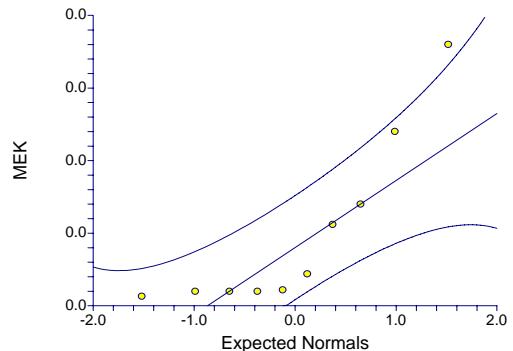
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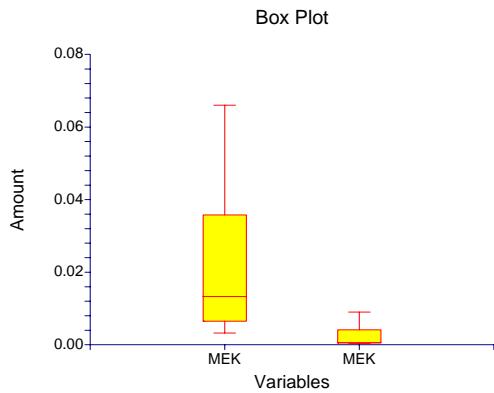
3

Normal Probability Plot of MEK



Normal Probability Plot of MEK





Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TBUTMEE	10	0.00027	3.299832E-05	1.043498E-05	2.463944E-04	2.936056E-04
TBUTMEE	10	0.00027	1.763834E-05	5.577734E-06	2.573823E-04	2.826177E-04

Note: T-alpha (TBUTMEE) = 2.2622, T-alpha (TBUTMEE) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	5.421011E-20	2.645751E-05	1.183216E-05	-2.485845E-05	2.485845E-05
Unequal	13.75	5.421011E-20	3.741658E-05	1.183216E-05	-2.541998E-05	2.541998E-05

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1484

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0000	1.000000	Accept Ho	0.050000	0.010000
Difference < 0	0.0000	0.500000	Accept Ho	0.050000	0.010000
Difference > 0	0.0000	0.500000	Accept Ho	0.050000	0.010000
Difference: (TBUTMEE)-(TBUTMEE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0000	1.000000	Accept Ho	0.050000	0.010000
Difference < 0	0.0000	0.500000	Accept Ho	0.050000	0.010000
Difference > 0	0.0000	0.500000	Accept Ho	0.050000	0.010000
Difference: (TBUTMEE)-(TBUTMEE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TBUTMEE)	1.7549	0.079277	Cannot reject normality
Kurtosis Normality (TBUTMEE)	46.0632	0.000000	Reject normality
Omnibus Normality (TBUTMEE)	2124.8960	0.000000	Reject normality
Skewness Normality (TBUTMEE)	0.4573	0.647480	Cannot reject normality
Kurtosis Normality (TBUTMEE)	46.0632	0.000000	Reject normality
Omnibus Normality (TBUTMEE)	2122.0254	0.000000	Reject normality
Variance-Ratio Equal-Variance Test	3.5000	0.076004	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.3045	0.587854	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TBUTMEE	10	0.00025	0.00025	0.00032
TBUTMEE	10	0.00027	0.00025	0.00029

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TBUTMEE	40	95	105	12.36506
TBUTMEE	60	115	105	12.36506

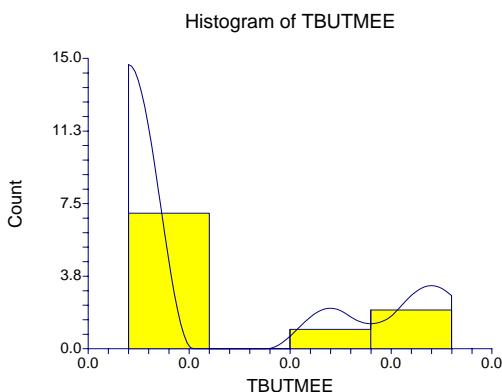
Number Sets of Ties = 4, Multiplicity Factor = 1008

Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction			
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.8087	0.418670	Accept Ho	-0.7683	0.442313	Accept Ho
Diff<0			-0.8087	0.209335	Accept Ho	-0.7683	0.221156	Accept Ho
Diff>0			-0.8087	0.790665	Accept Ho	-0.8492	0.802106	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

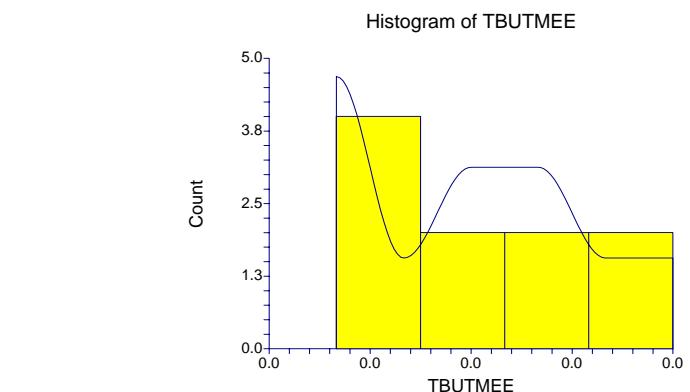
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.400000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

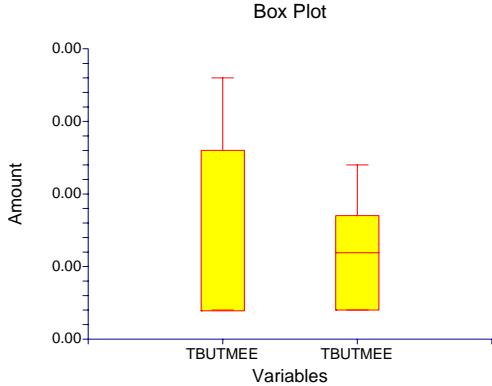
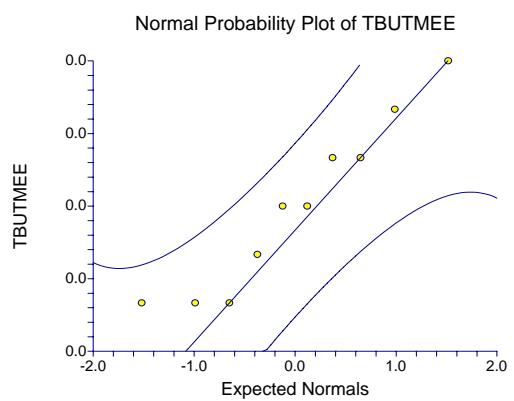
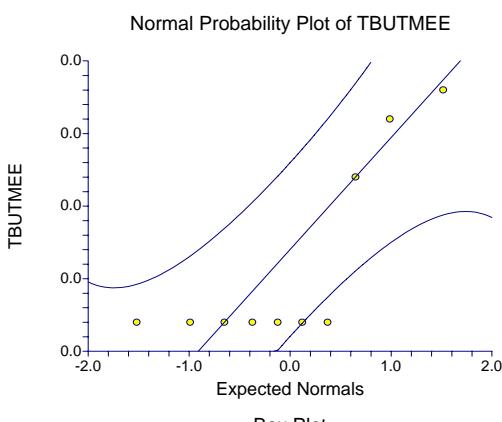


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Two-Sample Test Report



Two-Sample Test Report

Page 1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TCE	10	0.00025	0	0	0.00025	0.00025
TCE	10	0.000265	2.460804E-05	7.781745E-06	2.473965E-04	2.826035E-04

Note: T-alpha (TCE) = 0.0000, T-alpha (TCE) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.000015	1.740051E-05	7.781745E-06	-3.134884E-05	1.34884E-06
Unequal	9.00	-0.000015	2.460804E-05	7.781745E-06	-3.260353E-05	2.60353E-06

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2622

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.9276	0.069838	Accept Ho	0.446237	0.205582
Difference < 0	-1.9276	0.034919	Reject Ho	0.583000	0.293927
Difference > 0	-1.9276	0.965081	Accept Ho	0.000230	0.000019
Difference: (TCE)-(TCE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.9276	0.086004	Accept Ho	0.406271	0.162546
Difference < 0	-1.9276	0.043002	Reject Ho	0.553902	0.248465
Difference > 0	-1.9276	0.956998	Accept Ho	0.000289	0.000030
Difference: (TCE)-(TCE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TCE)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (TCE)			
Omnibus Normality (TCE)			
Skewness Normality (TCE)	2.5080	0.012140	Reject normality
Kurtosis Normality (TCE)	46.0632	0.000000	Reject normality
Omnibus Normality (TCE)	2128.1066	0.000000	Reject normality
Variance-Ratio Equal-Variance Test	0.0000	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	4.8214	0.041456	Reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TCE	10	0.00025	0.00025	0.00025
TCE	10	0.000255	0.00025	0.0003

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TCE	25	80	105	10.0394
TCE	75	130	105	10.0394

Number Sets of Ties = 2, Multiplicity Factor = 3384

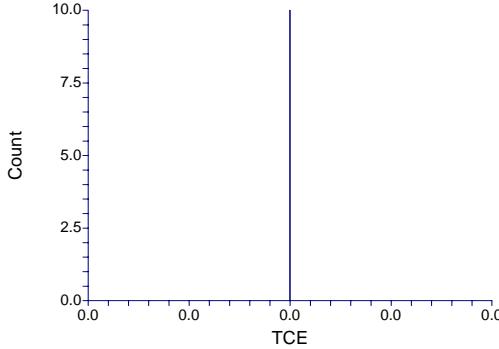
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-2.4902	0.012767	Reject Ho	-2.4404	0.014672	Reject Ho
Diff<0			-2.4902	0.006384	Reject Ho	-2.4404	0.007336	Reject Ho
Diff>0			-2.4902	0.993616	Accept Ho	-2.5400	0.994457	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

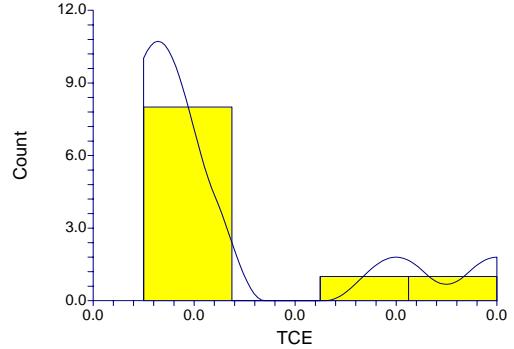
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.500000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.000000	0.5623	.025	Accept Ho	

Plots Section

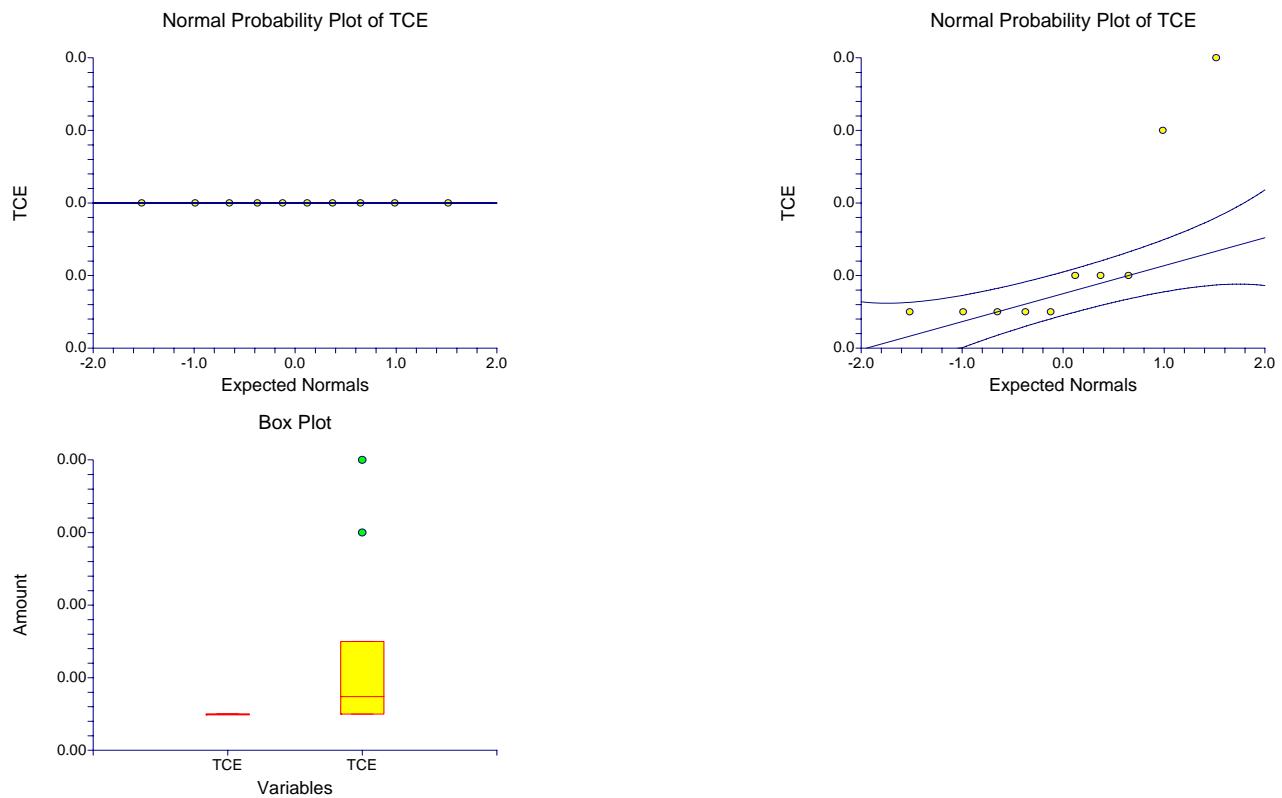
Histogram of TCE



Histogram of TCE



Two-Sample Test Report



**E-2 ASSABET RIVER SURFACE WATER UPSTREAM VERSUS
DOWNSTREAM**

Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AL-D	10	12.67	25.6101	8.098625	-5.650363	30.99036
AL-D	5	14.06	1.173882	0.5249762	12.60243	15.51757

Note: T-alpha (AL-D) = 2.2622, T-alpha (AL-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-1.39	21.31884	11.67681	-26.61621	23.83621
Unequal	9.08	-1.39	25.63699	8.115623	-19.72558	16.94558

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2593

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.1190	0.907064	Accept Ho	0.051400	0.010412
Difference < 0	-0.1190	0.453532	Accept Ho	0.062779	0.013247
Difference > 0	-0.1190	0.546468	Accept Ho	0.039384	0.007469
Difference: (AL-D)-(AL-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.1713	0.867766	Accept Ho	0.052721	0.010769
Difference < 0	-0.1713	0.433883	Accept Ho	0.068652	0.014694
Difference > 0	-0.1713	0.566117	Accept Ho	0.035621	0.006667
Difference: (AL-D)-(AL-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AL-D)	3.9532	0.000077	Reject normality
Kurtosis Normality (AL-D)	3.5503	0.000385	Reject normality
Omnibus Normality (AL-D)	28.2325	0.000001	Reject normality
Skewness Normality (AL-D)	0.0000		
Kurtosis Normality (AL-D)		1.000000	Cannot reject normality
Omnibus Normality (AL-D)			
Variance-Ratio Equal-Variance Test	475.9632	0.000021	Reject equal variances
Modified-Levene Equal-Variance Test	0.5502	0.471425	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AL-D	10	5.075	2.85	7.5
AL-D	5	14.6		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AL-D	5	60	80	8.157672
AL-D	45	60	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

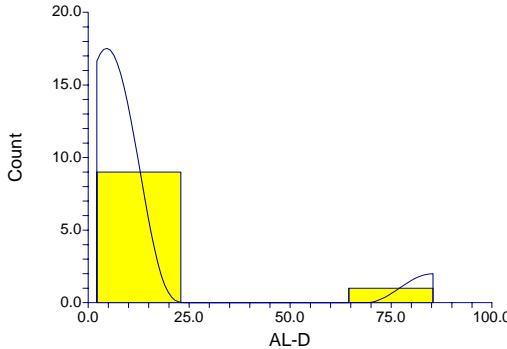
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.4517	0.014219	Reject Ho	2.3904	0.016831	Reject Ho
Diff<0			2.4517	0.007110	Reject Ho	2.3904	0.008415	Reject Ho
Diff>0			2.4517	0.992890	Accept Ho	2.5130	0.994014	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

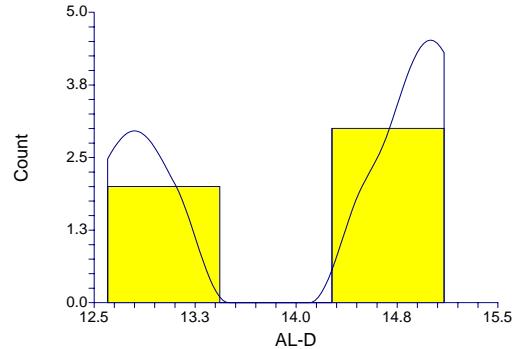
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.900000	0.6698	.050	Reject Ho	0.0040
D(1)<D(2)	0.900000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

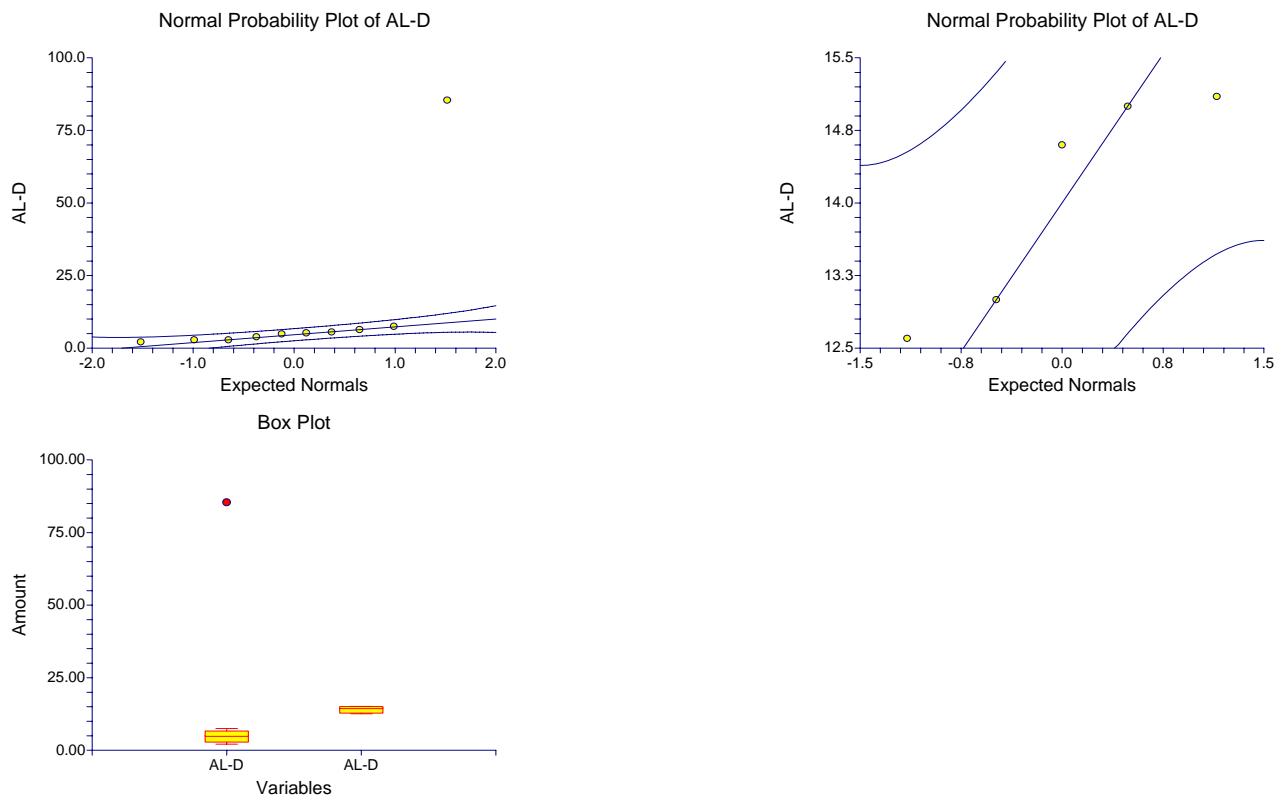
Histogram of AL-D



Histogram of AL-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AS-D	10	1.082	0.5582075	0.1765207	0.6826825	1.481318
AS-D	5	1.312	0.7131059	0.3189107	0.4265621	2.197438

Note: T-alpha (AS-D) = 2.2622, T-alpha (AS-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.23	0.6100719	0.3341501	-0.9518875	0.4918875
Unequal	6.55	-0.23	0.9056023	0.3645045	-1.103977	0.643977

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.3977

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.6883	0.503354	Accept Ho	0.097896	0.025176
Difference < 0	-0.6883	0.251677	Accept Ho	0.160621	0.044000
Difference > 0	-0.6883	0.748323	Accept Ho	0.010758	0.001593
Difference: (AS-D)-(AS-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.6310	0.549409	Accept Ho	0.084513	0.019705
Difference < 0	-0.6310	0.274704	Accept Ho	0.140761	0.035027
Difference > 0	-0.6310	0.725296	Accept Ho	0.013347	0.002197
Difference: (AS-D)-(AS-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AS-D)	-0.0637	0.949246	Cannot reject normality
Kurtosis Normality (AS-D)	-2.2063	0.027360	Reject normality
Omnibus Normality (AS-D)	4.8720	0.087510	Cannot reject normality
Skewness Normality (AS-D)	0.0000		
Kurtosis Normality (AS-D)		1.000000	Cannot reject normality
Omnibus Normality (AS-D)			
Variance-Ratio Equal-Variance Test	1.6320	0.496908	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0640	0.804234	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AS-D	10	1.15	0.48	1.7
AS-D	5	1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AS-D	20	75	80	8.017838
AS-D	30	45	40	8.017838

Number Sets of Ties = 1, Multiplicity Factor = 120

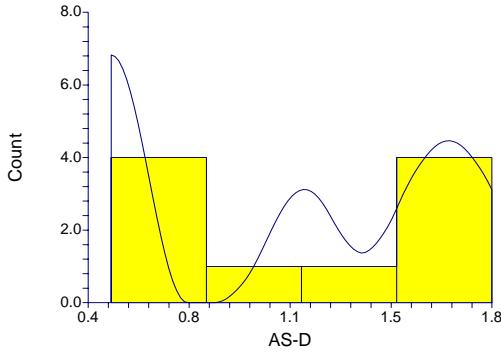
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.6236	0.532884	Accept Ho	0.5612	0.574628	Accept Ho
Diff<0			0.6236	0.266442	Accept Ho	0.5612	0.287314	Accept Ho
Diff>0			0.6236	0.733558	Accept Ho	0.6860	0.753634	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

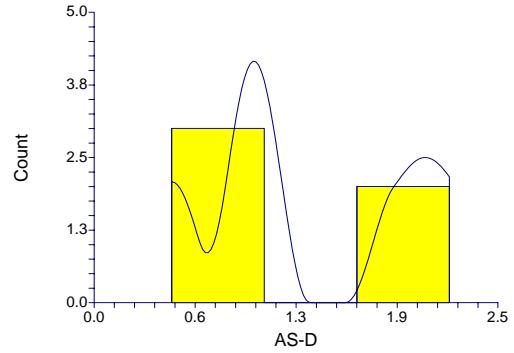
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

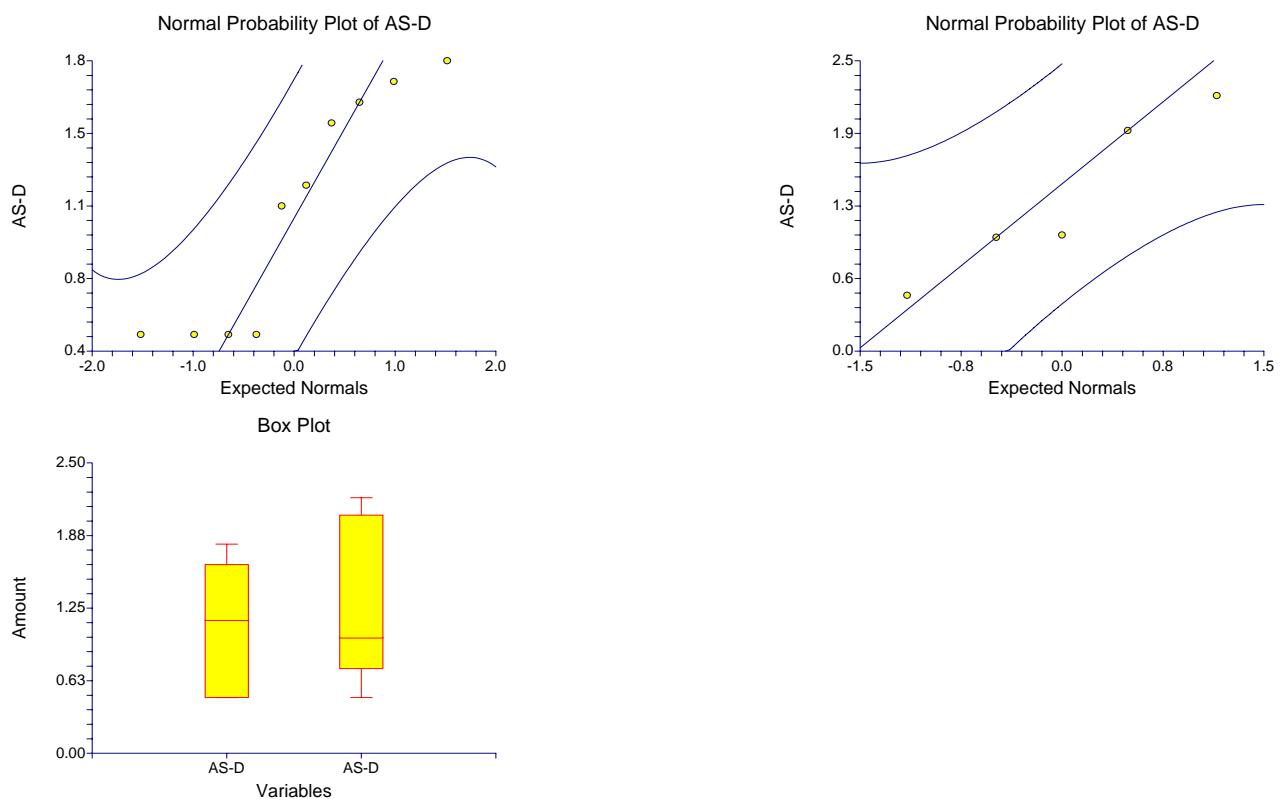
Histogram of AS-D



Histogram of AS-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BA-D	10	17.51	0.6454111	0.2040969	17.0483	17.9717
BA-D	5	17.48	0.303315	0.1356466	17.10338	17.85662

Note: T-alpha (BA-D) = 2.2622, T-alpha (BA-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.03	0.5627542	0.3082332	-0.6358973	0.6958973
Unequal	13.00	0.03	0.7131308	0.2450624	-0.4994254	0.5594255

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1604

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0973	0.923950	Accept Ho	0.050936	0.010275
Difference < 0	0.0973	0.538025	Accept Ho	0.041170	0.007883
Difference > 0	0.0973	0.461975	Accept Ho	0.060276	0.012595
Difference: (BA-D)-(BA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.1224	0.904440	Accept Ho	0.051481	0.010436
Difference < 0	0.1224	0.547780	Accept Ho	0.039112	0.007406
Difference > 0	0.1224	0.452220	Accept Ho	0.063175	0.013351
Difference: (BA-D)-(BA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BA-D)	0.5057	0.613085	Cannot reject normality
Kurtosis Normality (BA-D)	0.1535	0.877998	Cannot reject normality
Omnibus Normality (BA-D)	0.2793	0.869675	Cannot reject normality
Skewness Normality (BA-D)	0.0000		
Kurtosis Normality (BA-D)		1.000000	Cannot reject normality
Omnibus Normality (BA-D)			
Variance-Ratio Equal-Variance Test	4.5278	0.159837	Cannot reject equal variances
Modified-Levene Equal-Variance Test	2.4375	0.142471	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BA-D	10	17.45	16.9	18.1
BA-D	5	17.4		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BA-D	24	79	80	8.128433
BA-D	26	41	40	8.128433

Number Sets of Ties = 2, Multiplicity Factor = 30

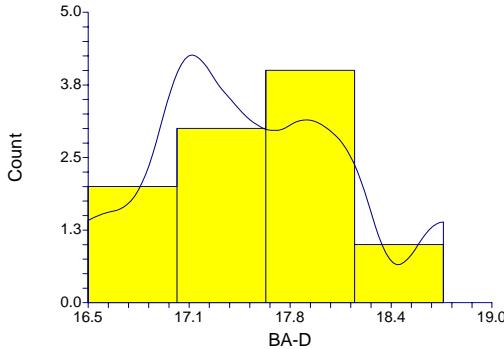
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.1230	0.902087	Accept Ho	0.0615	0.950951	Accept Ho
Diff<0			0.1230	0.451044	Accept Ho	0.0615	0.475476	Accept Ho
Diff>0			0.1230	0.548956	Accept Ho	0.1845	0.573204	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

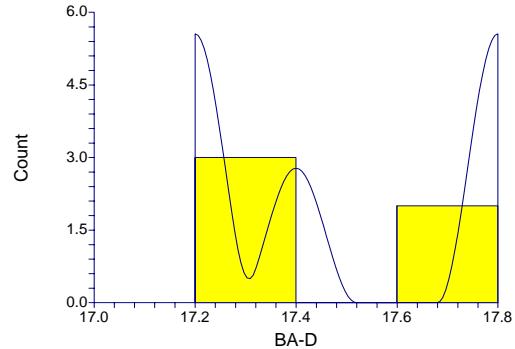
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

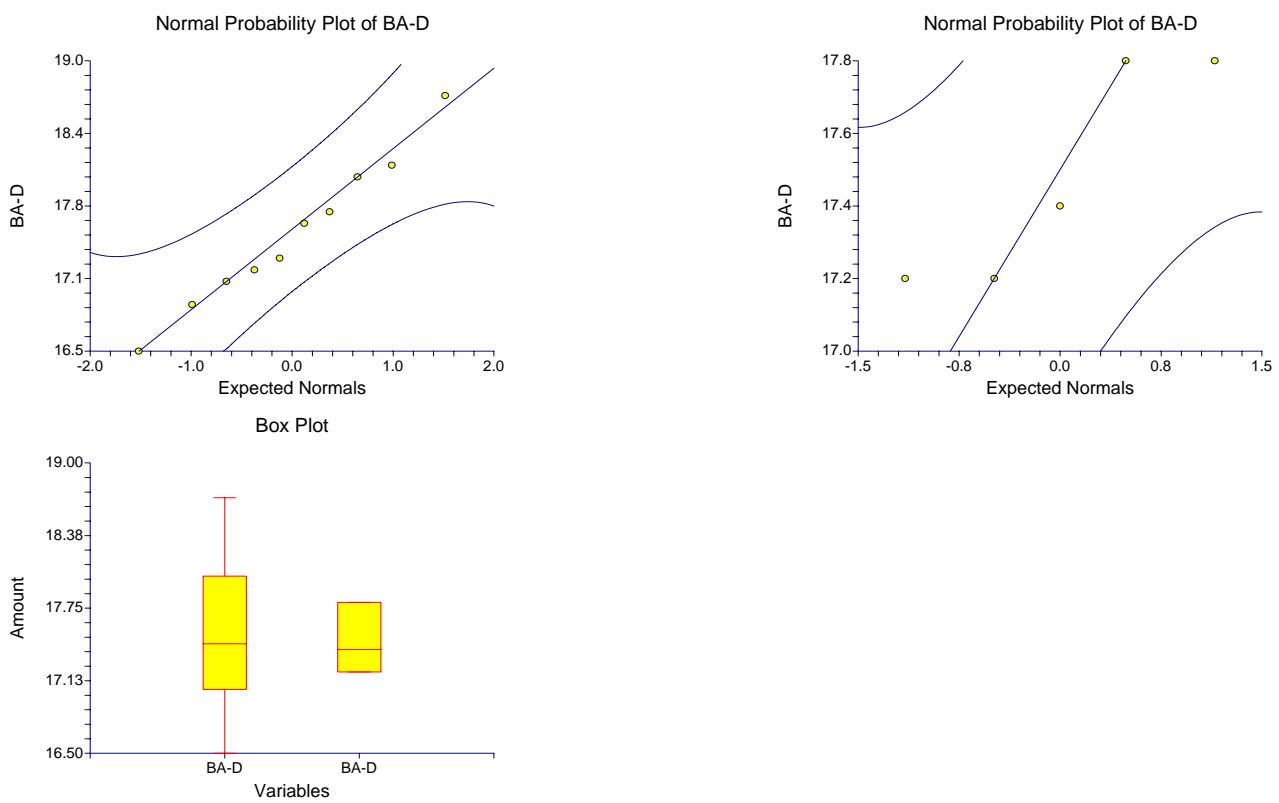
Histogram of BA-D



Histogram of BA-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CA-D	10	18950	613.279	193.9358	18511.29	19388.71
CA-D	5	20440	568.3309	254.1653	19734.32	21145.68

Note: T-alpha (CA-D) = 2.2622, T-alpha (CA-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-1490	599.8077	328.5282	-2199.742	-780.258
Unequal	8.70	-1490	836.1287	319.7047	-2217.008	-762.9918

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2740

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-4.5354	0.000560	Reject Ho	0.986801	0.913156
Difference < 0	-4.5354	0.000280	Reject Ho	0.995844	0.956796
Difference > 0	-4.5354	0.999720	Accept Ho	0.000000	0.000000
Difference: (CA-D)-(CA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-4.6606	0.001296	Reject Ho	0.983952	0.877561
Difference < 0	-4.6606	0.000648	Reject Ho	0.995587	0.941377
Difference > 0	-4.6606	0.999352	Accept Ho	0.000000	0.000000
Difference: (CA-D)-(CA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CA-D)	-0.4136	0.679189	Cannot reject normality
Kurtosis Normality (CA-D)	-1.1830	0.236825	Cannot reject normality
Omnibus Normality (CA-D)	1.5704	0.456020	Cannot reject normality
Skewness Normality (CA-D)	0.0000		
Kurtosis Normality (CA-D)		1.000000	Cannot reject normality
Omnibus Normality (CA-D)			
Variance-Ratio Equal-Variance Test	1.1644	0.952774	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.6877	0.421908	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CA-D	10	19100	18200	19500
CA-D	5	20300		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CA-D	0	55	80	8.150373
CA-D	50	65	40	8.150373

Number Sets of Ties = 2, Multiplicity Factor = 12

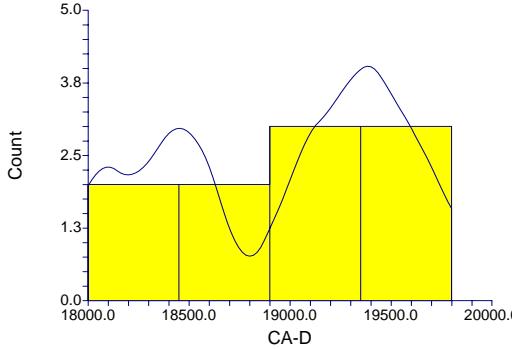
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.0673	0.002160	Reject Ho	3.0060	0.002647	Reject Ho
Diff<0			3.0673	0.001080	Reject Ho	3.0060	0.001324	Reject Ho
Diff>0			3.0673	0.998920	Accept Ho	3.1287	0.999122	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

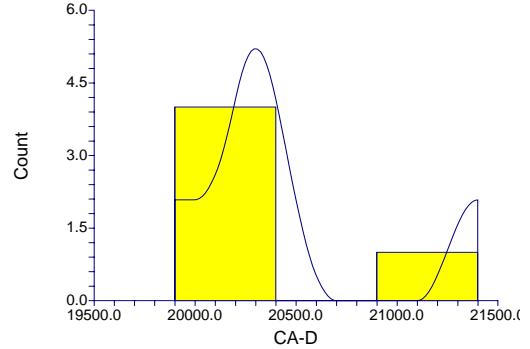
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	1.000000	0.6698	.050	Reject Ho	0.0007
D(1)<D(2)	1.000000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

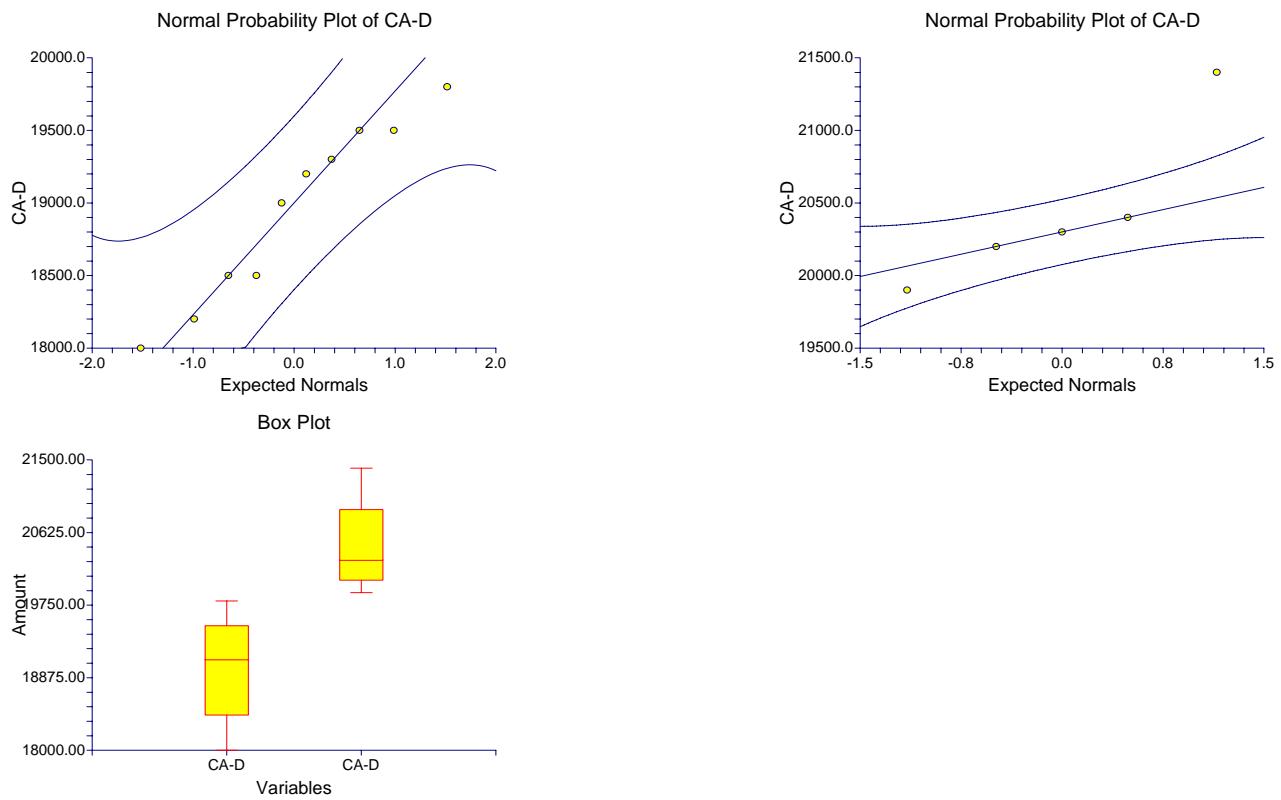
Histogram of CA-D



Histogram of CA-D



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CO-D	10	0.305	0.1179218	3.729015E-02	0.2206438	0.3893562
CO-D	5	0.426	5.128353E-02	2.293469E-02	0.3623231	0.4896769

Note: T-alpha (CO-D) = 2.2622, T-alpha (CO-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.121	0.1021575	5.595396E-02	-0.2418812	-1.188087E-04
Unequal	12.93	-0.121	0.1285907	4.377848E-02	-0.2156276	-2.637244E-02

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1615

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.1625	0.049806	Reject Ho	0.516726	0.247727
Difference < 0	-2.1625	0.024903	Reject Ho	0.656576	0.349708
Difference > 0	-2.1625	0.975097	Accept Ho	0.000107	0.000009
Difference: (CO-D)-(CO-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.7639	0.016169	Reject Ho	0.723969	0.435516
Difference < 0	-2.7639	0.008084	Reject Ho	0.834020	0.558668
Difference > 0	-2.7639	0.991916	Accept Ho	0.000010	0.000001
Difference: (CO-D)-(CO-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CO-D)	-0.1495	0.881134	Cannot reject normality
Kurtosis Normality (CO-D)	-1.8450	0.065033	Cannot reject normality
Omnibus Normality (CO-D)	3.4265	0.180278	Cannot reject normality
Skewness Normality (CO-D)	0.0000		
Kurtosis Normality (CO-D)		1.000000	Cannot reject normality
Omnibus Normality (CO-D)			
Variance-Ratio Equal-Variance Test	5.2873	0.123785	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.6741	0.218227	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CO-D	10	0.36	0.175	0.44
CO-D	5	0.41		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CO-D	6.5	61.5	80	8.002975
CO-D	43.5	58.5	40	8.002975

Number Sets of Ties = 4, Multiplicity Factor = 132

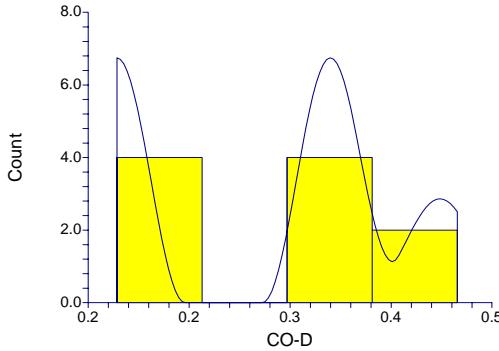
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.3116	0.020798	Reject Ho	2.2492	0.024502	Reject Ho
Diff<0			2.3116	0.010399	Reject Ho	2.2492	0.012251	Reject Ho
Diff>0			2.3116	0.989601	Accept Ho	2.3741	0.991205	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

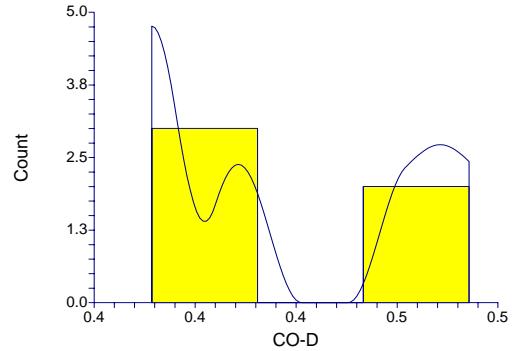
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.800000	0.6698	.050	Reject Ho	0.0193
D(1)<D(2)	0.800000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

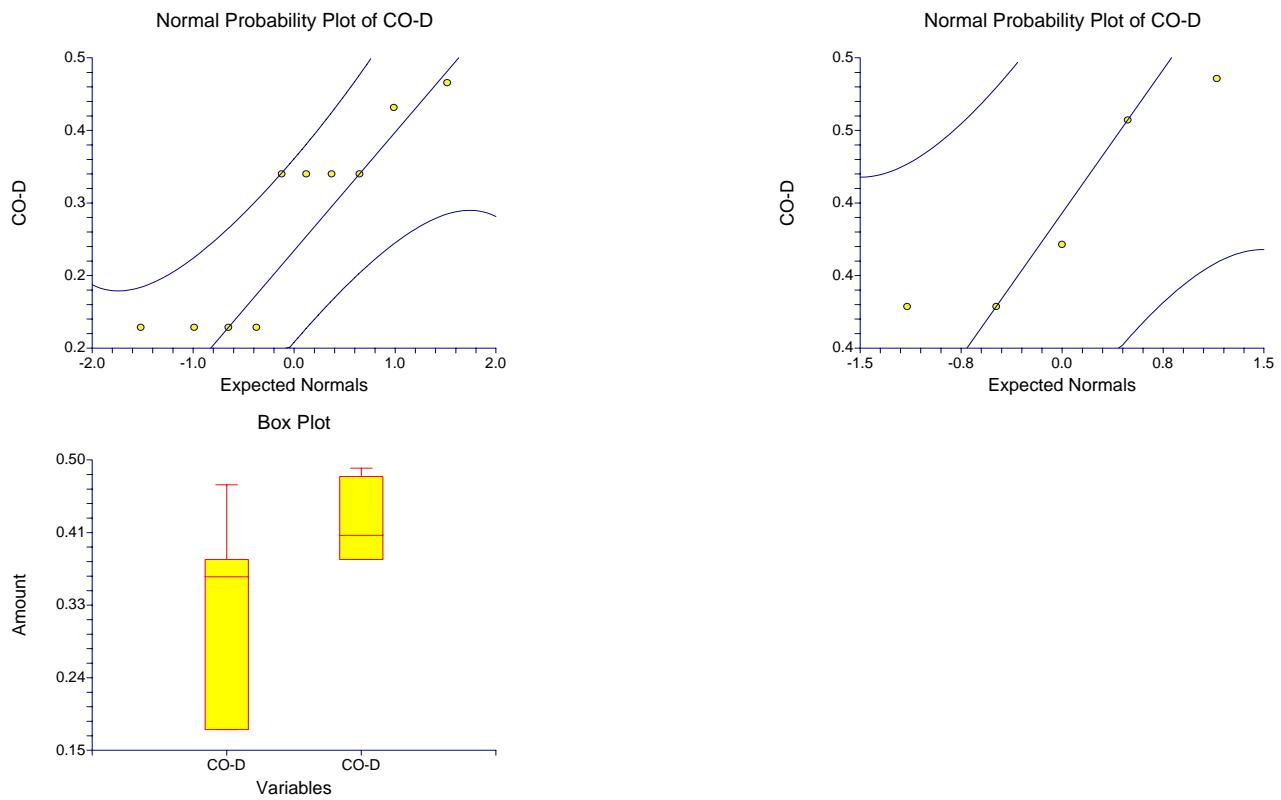
Histogram of CO-D



Histogram of CO-D



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CU-D	10	1.385	0.5328383	0.1684983	1.00383	1.76617
CU-D	5	2.54	0.2302173	0.1029563	2.254148	2.825853

Note: T-alpha (CU-D) = 2.2622, T-alpha (CU-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-1.155	0.4613734	0.2527046	-1.700935	-0.6090649
Unequal	12.92	-1.155	0.5804452	0.1974631	-1.581855	-0.7281453

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1617

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-4.5706	0.000525	Reject Ho	0.987853	0.917804
Difference < 0	-4.5706	0.000263	Reject Ho	0.996232	0.959558
Difference > 0	-4.5706	0.999737	Accept Ho	0.000000	0.000000
Difference: (CU-D)-(CU-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-5.8492	0.000058	Reject Ho	0.999682	0.993264
Difference < 0	-5.8492	0.000029	Reject Ho	0.999946	0.997893
Difference > 0	-5.8492	0.999971	Accept Ho	0.000000	0.000000
Difference: (CU-D)-(CU-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CU-D)	3.6129	0.000303	Reject normality
Kurtosis Normality (CU-D)	3.2619	0.001107	Reject normality
Omnibus Normality (CU-D)	23.6925	0.000007	Reject normality
Skewness Normality (CU-D)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (CU-D)			
Omnibus Normality (CU-D)			
Variance-Ratio Equal-Variance Test	5.3569	0.121103	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.1795	0.678765	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CU-D	10	1.25	1.05	1.5
CU-D	5	2.5		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CU-D	4	59	80	8.128433
CU-D	46	61	40	8.128433

Number Sets of Ties = 2, Multiplicity Factor = 30

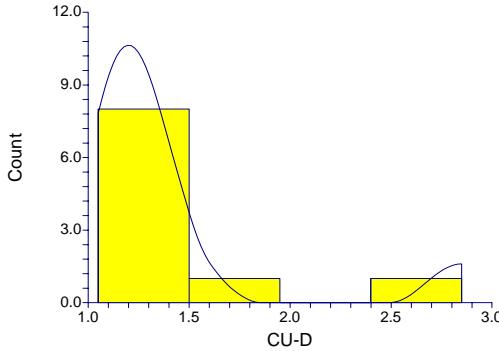
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.5835	0.009780	Reject Ho	2.5220	0.011669	Reject Ho
Diff<0			2.5835	0.004890	Reject Ho	2.5220	0.005834	Reject Ho
Diff>0			2.5835	0.995110	Accept Ho	2.6450	0.995916	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

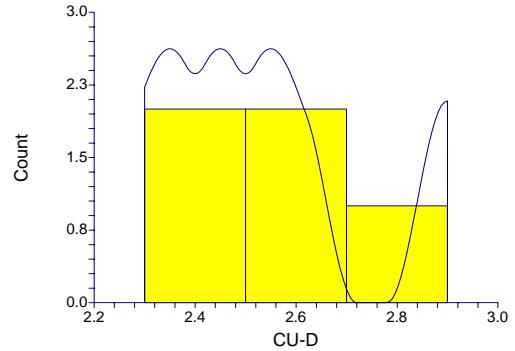
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.900000	0.6698	.050	Reject Ho	0.0040
D(1)<D(2)	0.900000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

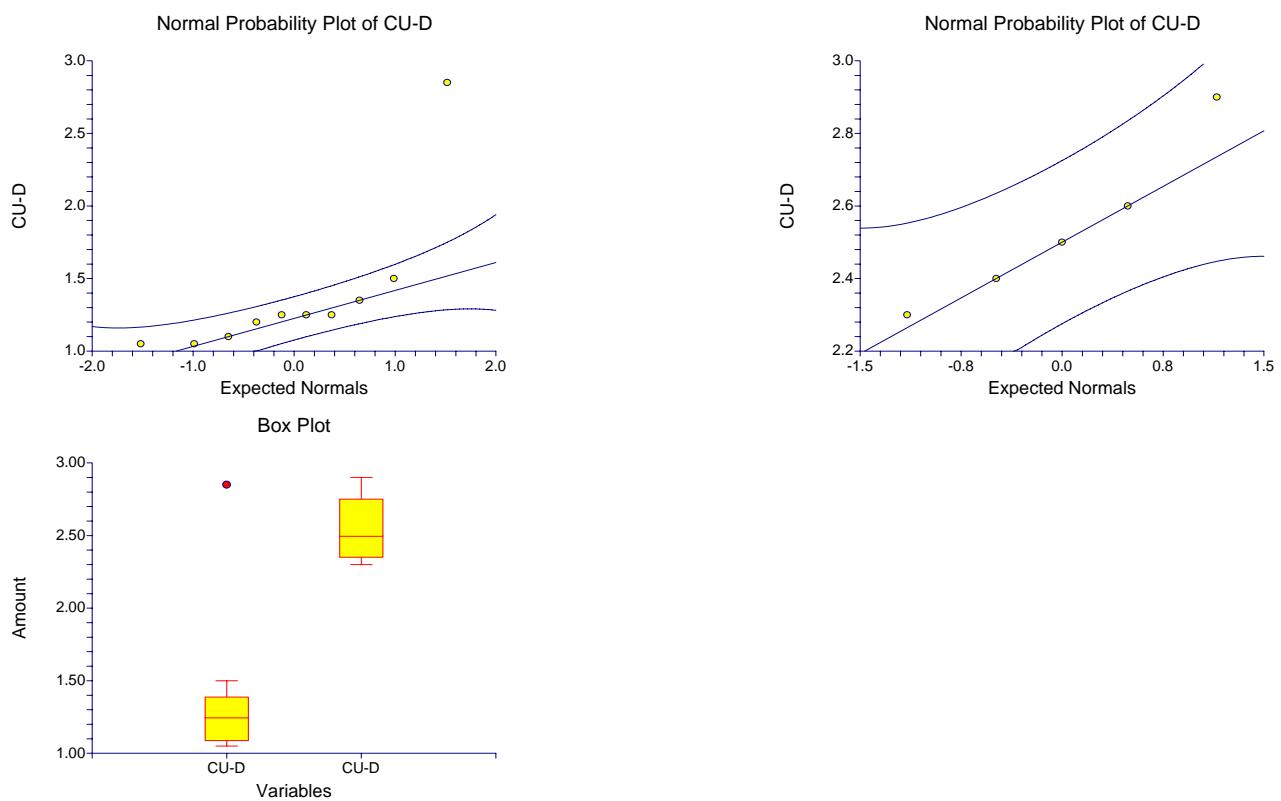
Histogram of CU-D



Histogram of CU-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
FE-D	10	306.2	135.0899	42.71918	209.5625	402.8375
FE-D	5	271.4	82.08105	36.70776	169.4829	373.3171

Note: T-alpha (FE-D) = 2.2622, T-alpha (FE-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	34.8	121.273	66.42395	-108.7002	178.3002
Unequal	12.21	34.8	158.0715	56.32396	-87.68094	157.2809

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1746

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5239	0.609159	Accept Ho	0.077502	0.018444
Difference < 0	0.5239	0.695420	Accept Ho	0.016076	0.002554
Difference > 0	0.5239	0.304580	Accept Ho	0.125531	0.031871
Difference: (FE-D)-(FE-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6179	0.548019	Accept Ho	0.088063	0.021800
Difference < 0	0.6179	0.725991	Accept Ho	0.012876	0.001976
Difference > 0	0.6179	0.274009	Accept Ho	0.144412	0.038106
Difference: (FE-D)-(FE-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (FE-D)	2.2944	0.021768	Reject normality
Kurtosis Normality (FE-D)	1.8508	0.064196	Cannot reject normality
Omnibus Normality (FE-D)	8.6898	0.012973	Reject normality
Skewness Normality (FE-D)	0.0000		
Kurtosis Normality (FE-D)		1.000000	Cannot reject normality
Omnibus Normality (FE-D)			
Variance-Ratio Equal-Variance Test	2.7087	0.350186	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.7577	0.399852	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
FE-D	10	264	197	381
FE-D	5	262		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
FE-D	25	80	80	8.164966
FE-D	25	40	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

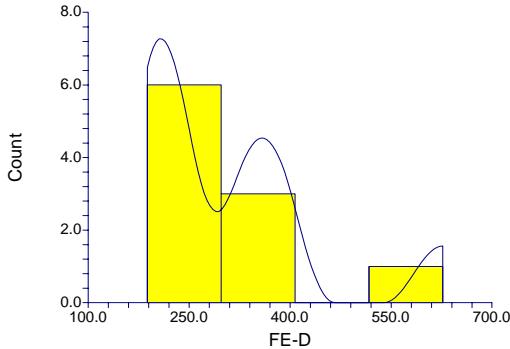
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	1.046953	Accept Ho	0.0000	1.000000	Accept Ho	0.0612	1.000000	Accept Ho
Diff<0	0.476523	Accept Ho	0.0000	0.500000	Accept Ho	-0.0612	0.524415	Accept Ho
Diff>0	0.523477	Accept Ho	0.0000	0.500000	Accept Ho	0.0612	0.524415	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

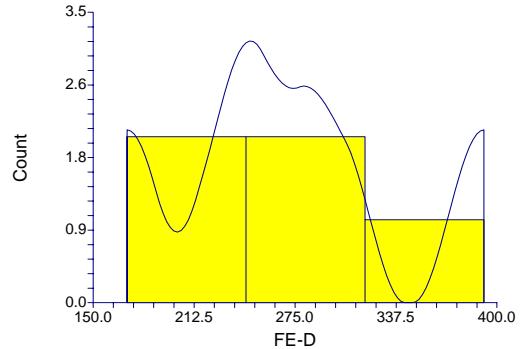
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

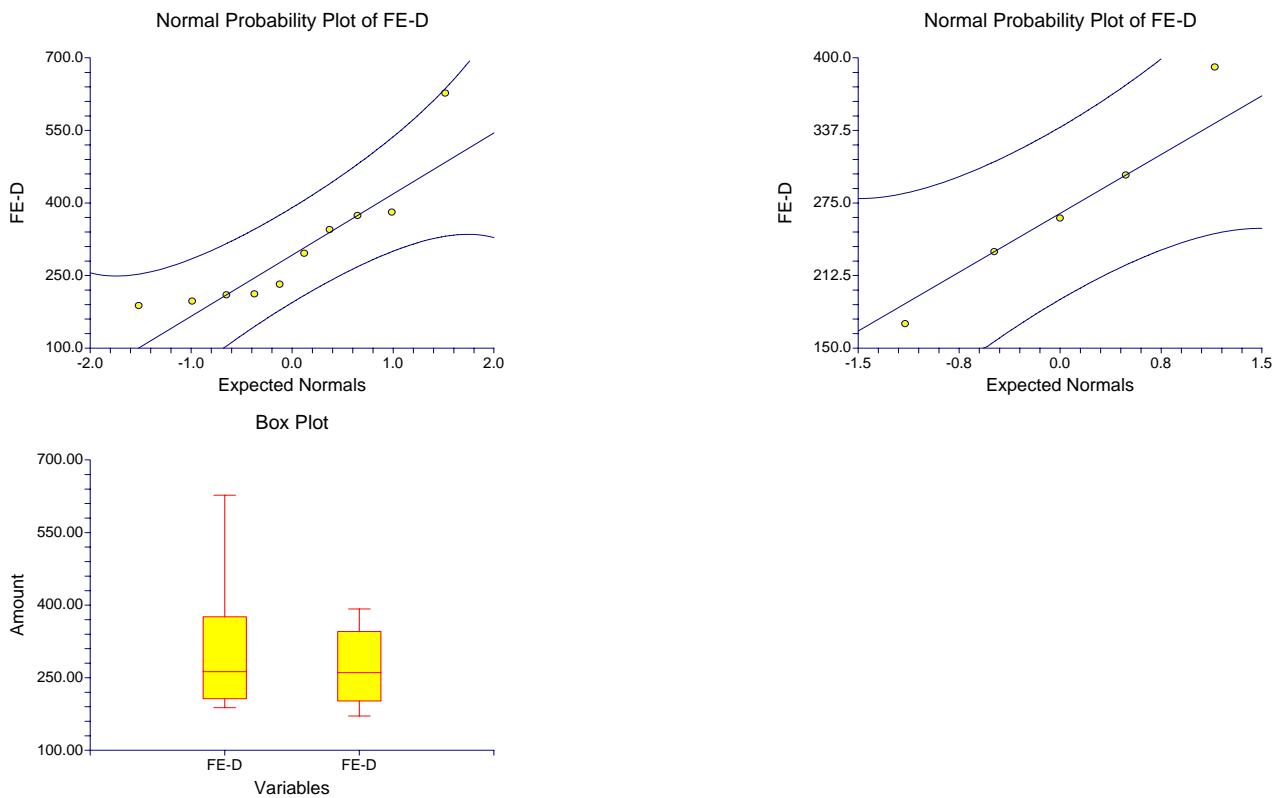
Histogram of FE-D



Histogram of FE-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
PB-D	10	0.35	0.6517199	0.2060919	-0.1162124	0.8162124
PB-D	5	0.35	9.407444E-02	4.207137E-02	0.2331912	0.4668089

Note: T-alpha (PB-D) = 2.2622, T-alpha (PB-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0	0.5447688	0.2983822	-0.6446155	0.6446155
Unequal	9.73	0	0.6584747	0.2103423	-0.4704561	0.4704561

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2366

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0000	1.000000	Accept Ho	0.050000	0.010000
Difference < 0	0.0000	0.500000	Accept Ho	0.000000	0.000000
Difference > 0	0.0000	0.500000	Accept Ho	0.000000	0.000000
Difference: (PB-D)-(PB-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0000	1.000000	Accept Ho	0.050000	0.010000
Difference < 0	0.0000	0.500000	Accept Ho	0.000000	0.000000
Difference > 0	0.0000	0.500000	Accept Ho	0.000000	0.000000
Difference: (PB-D)-(PB-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (PB-D)	3.9485	0.000079	Reject normality
Kurtosis Normality (PB-D)	3.5464	0.000391	Reject normality
Omnibus Normality (PB-D)	28.1675	0.000001	Reject normality
Skewness Normality (PB-D)	0.0000		
Kurtosis Normality (PB-D)		1.000000	Cannot reject normality
Omnibus Normality (PB-D)			
Variance-Ratio Equal-Variance Test	47.9931	0.002040	Reject equal variances
Modified-Levene Equal-Variance Test	0.3373	0.571329	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
PB-D	10	0.1475	0.095	0.225
PB-D	5	0.39		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
PB-D	5	60	80	8.164966
PB-D	45	60	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

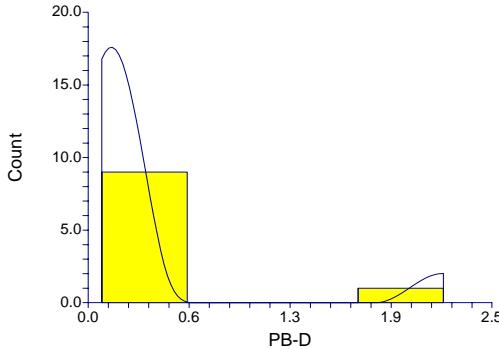
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.012654	Reject Ho	2.4495	0.014306	Reject Ho	2.3883	0.016929	Reject Ho
Diff<0	0.006327	Reject Ho	2.4495	0.007153	Reject Ho	2.3883	0.008464	Reject Ho
Diff>0	0.993673	Accept Ho	2.4495	0.992847	Accept Ho	2.5107	0.993976	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

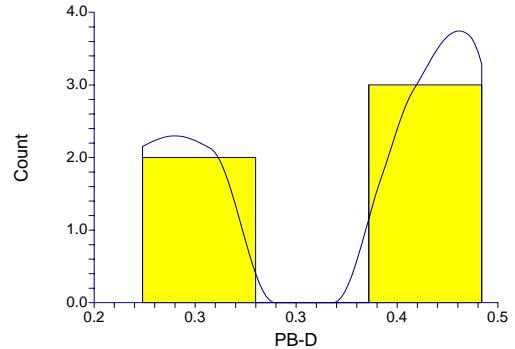
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.900000	0.6698	.050	Reject Ho	0.0040
D(1)<D(2)	0.900000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

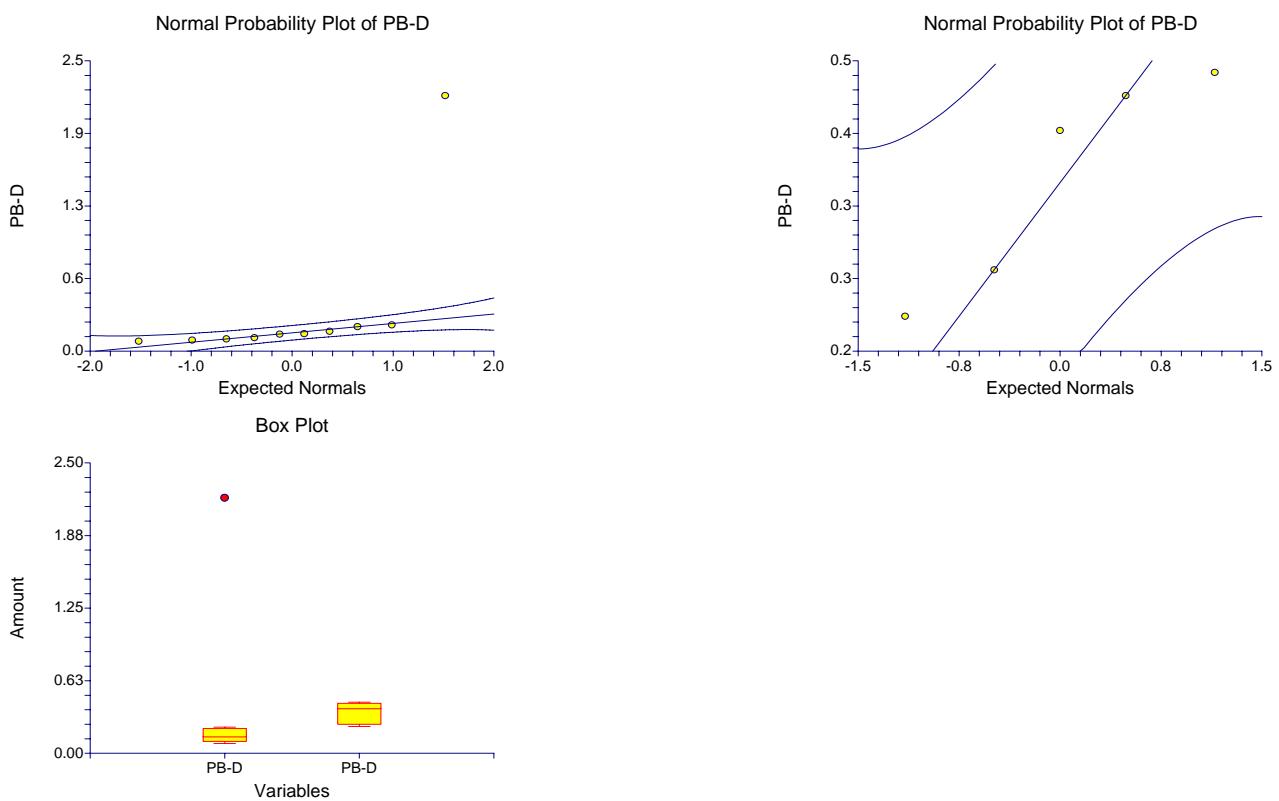
Histogram of PB-D



Histogram of PB-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MG-D	10	4286	319.4161	101.0082	4057.503	4514.497
MG-D	5	4550	74.16199	33.16625	4457.916	4642.084

Note: T-alpha (MG-D) = 2.2622, T-alpha (MG-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-264	268.9352	147.3019	-582.2264	54.22638
Unequal	10.76	-264	327.9126	106.314	-498.6236	-29.37638

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2069

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.7922	0.096386	Accept Ho	0.382322	0.157780
Difference < 0	-1.7922	0.048193	Reject Ho	0.521210	0.236832
Difference > 0	-1.7922	0.951807	Accept Ho	0.000405	0.000039
Difference: (MG-D)-(MG-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.4832	0.030828	Reject Ho	0.617368	0.320828
Difference < 0	-2.4832	0.015414	Reject Ho	0.751091	0.439256
Difference > 0	-2.4832	0.984586	Accept Ho	0.000034	0.000003
Difference: (MG-D)-(MG-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MG-D)	-0.1363	0.891593	Cannot reject normality
Kurtosis Normality (MG-D)	-1.1649	0.244065	Cannot reject normality
Omnibus Normality (MG-D)	1.3755	0.502698	Cannot reject normality
Skewness Normality (MG-D)	0.0000		
Kurtosis Normality (MG-D)		1.000000	Cannot reject normality
Omnibus Normality (MG-D)			
Variance-Ratio Equal-Variance Test	18.5503	0.012826	Reject equal variances
Modified-Levene Equal-Variance Test	6.3751	0.025368	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MG-D	10	4370	3940	4640
MG-D	5	4540		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MG-D	10	65	80	8.164966
MG-D	40	55	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

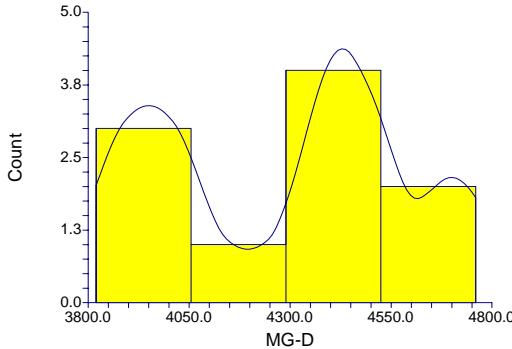
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.075258	Accept Ho	1.8371	0.066193	Accept Ho	1.7759	0.075753	Accept Ho
Diff<0	0.037629	Reject Ho	1.8371	0.033096	Reject Ho	1.7759	0.037876	Reject Ho
Diff>0	0.962371	Accept Ho	1.8371	0.966904	Accept Ho	1.8984	0.971175	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

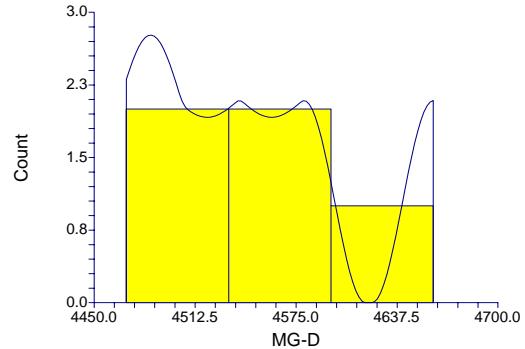
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.700000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

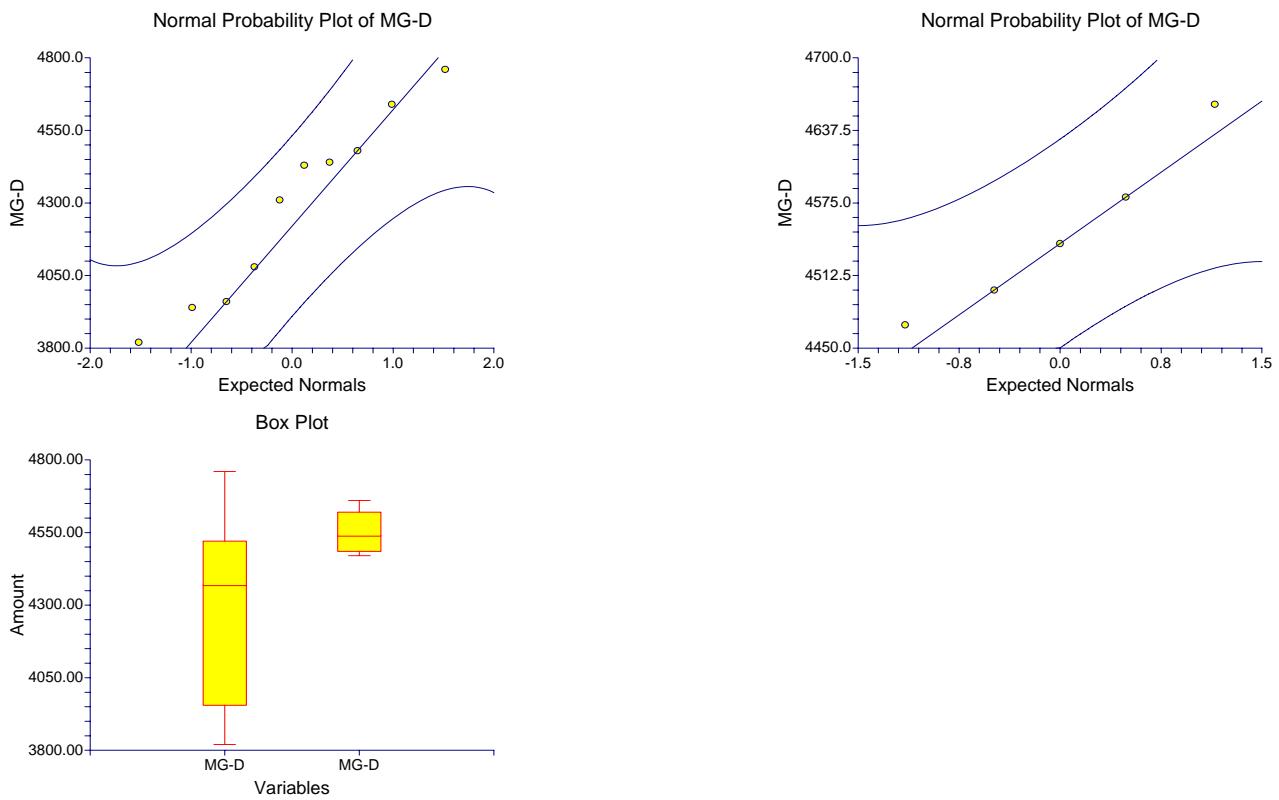
Histogram of MG-D



Histogram of MG-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MN-D	10	60.68	12.1926	3.855639	51.95794	69.40206
MN-D	5	76.74	21.14079	9.454449	50.49024	102.9898

Note: T-alpha (MN-D) = 2.2622, T-alpha (MN-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-16.06	15.506	8.492986	-34.40798	2.287979
Unequal	5.38	-16.06	24.40476	10.21041	-41.76532	9.645316

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.5176

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.8910	0.081122	Accept Ho	0.417472	0.179392
Difference < 0	-1.8910	0.040561	Reject Ho	0.558252	0.264888
Difference > 0	-1.8910	0.959439	Accept Ho	0.000287	0.000026
Difference: (MN-D)-(MN-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.5729	0.172490	Accept Ho	0.255690	0.076799
Difference < 0	-1.5729	0.086245	Accept Ho	0.393493	0.132416
Difference > 0	-1.5729	0.913755	Accept Ho	0.001153	0.000160
Difference: (MN-D)-(MN-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MN-D)	3.4521	0.000556	Reject normality
Kurtosis Normality (MN-D)	3.1278	0.001761	Reject normality
Omnibus Normality (MN-D)	21.6997	0.000019	Reject normality
Skewness Normality (MN-D)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (MN-D)			
Omnibus Normality (MN-D)			
Variance-Ratio Equal-Variance Test	3.0064	0.156991	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.7004	0.214856	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MN-D	10	57.35	53.9	64
MN-D	5	66.6		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MN-D	9	64	80	8.164966
MN-D	41	56	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

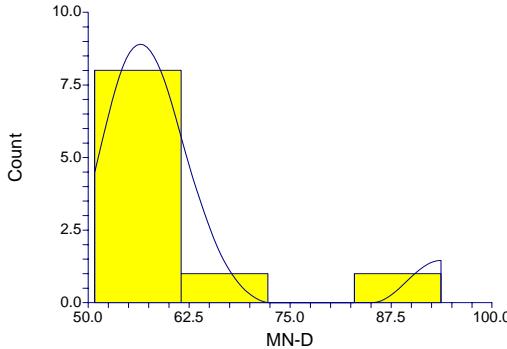
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.055278	Accept Ho	1.9596	0.050044	Accept Ho	1.8984	0.057649	Accept Ho
Diff<0	0.027639	Reject Ho	1.9596	0.025022	Reject Ho	1.8984	0.028825	Reject Ho
Diff>0	0.972361	Accept Ho	1.9596	0.974978	Accept Ho	2.0208	0.978351	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

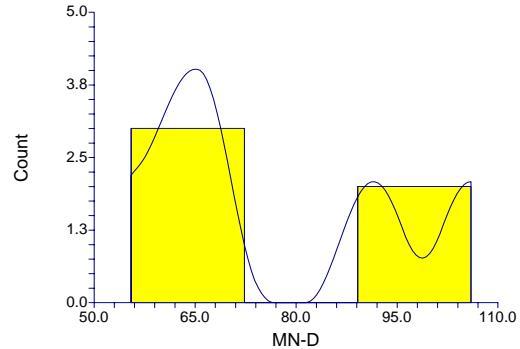
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.700000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

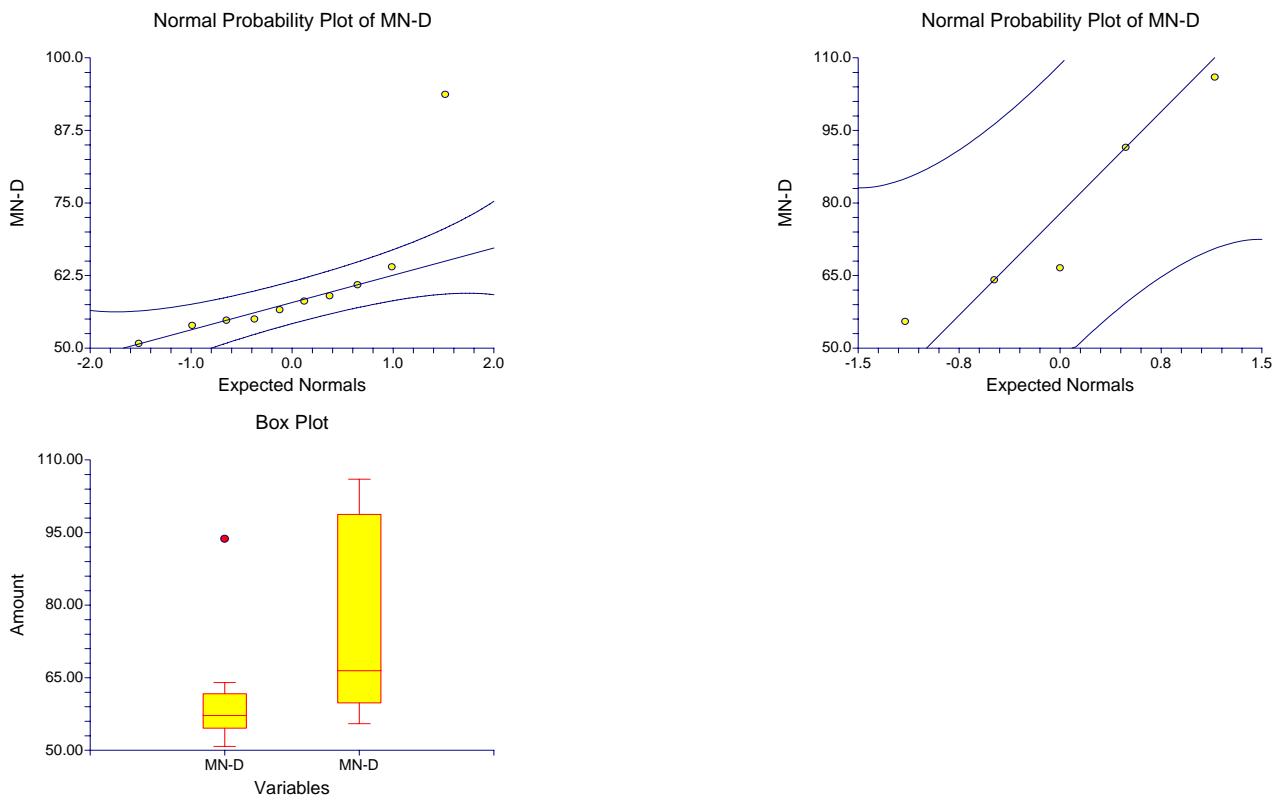
Histogram of MN-D



Histogram of MN-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
HG-D	10	0.02335	1.533705E-02	0.00485	1.237854E-02	3.432146E-02
HG-D	5	0.0185	0	0	0.0185	0.0185

Note: T-alpha (HG-D) = 2.2622, T-alpha (HG-D) = 0.0000

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.00485	1.276119E-02	6.989594E-03	-0.0102501	0.0199501
Unequal	9.00	0.00485	1.533705E-02	0.00485	-6.121462E-03	1.582146E-02

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2622

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6939	0.499964	Accept Ho	0.098690	0.025446
Difference < 0	0.6939	0.750018	Accept Ho	0.010608	0.001567
Difference > 0	0.6939	0.249982	Accept Ho	0.161913	0.044468
Difference: (HG-D)-(HG-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0000	0.343436	Accept Ho	0.145950	0.040897
Difference < 0	1.0000	0.828282	Accept Ho	0.005014	0.000696
Difference > 0	1.0000	0.171718	Accept Ho	0.236006	0.071181
Difference: (HG-D)-(HG-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (HG-D)	3.9770	0.000070	Reject normality
Kurtosis Normality (HG-D)	3.5692	0.000358	Reject normality
Omnibus Normality (HG-D)	28.5559	0.000001	Reject normality
Skewness Normality (HG-D)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (HG-D)			
Omnibus Normality (HG-D)			
Variance-Ratio Equal-Variance Test	9999800001.00000.000000		Reject equal variances
Modified-Levene Equal-Variance Test	0.4815	0.499964	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
HG-D	10	0.0185	0.0185	0.0185
HG-D	5	0.0185		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
HG-D	27.5	82.5	80	3.535534
HG-D	22.5	37.5	40	3.535534

Number Sets of Ties = 1, Multiplicity Factor = 2730

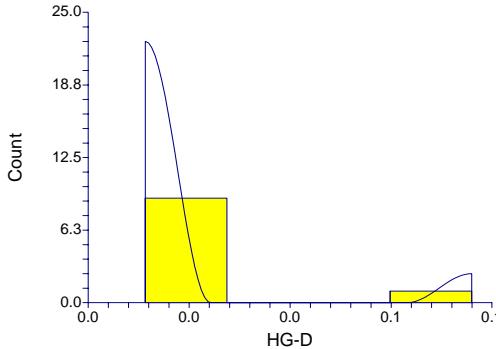
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.7071	0.479500	Accept Ho	-0.5657	0.571608	Accept Ho
Diff<0			-0.7071	0.760250	Accept Ho	-0.8485	0.801928	Accept Ho
Diff>0			-0.7071	0.239750	Accept Ho	-0.5657	0.285804	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

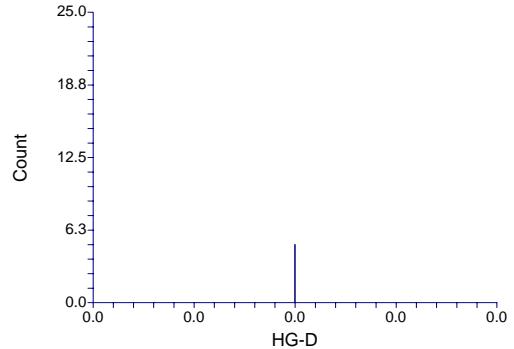
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.100000	0.6698	.050	Accept Ho	1.0000
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

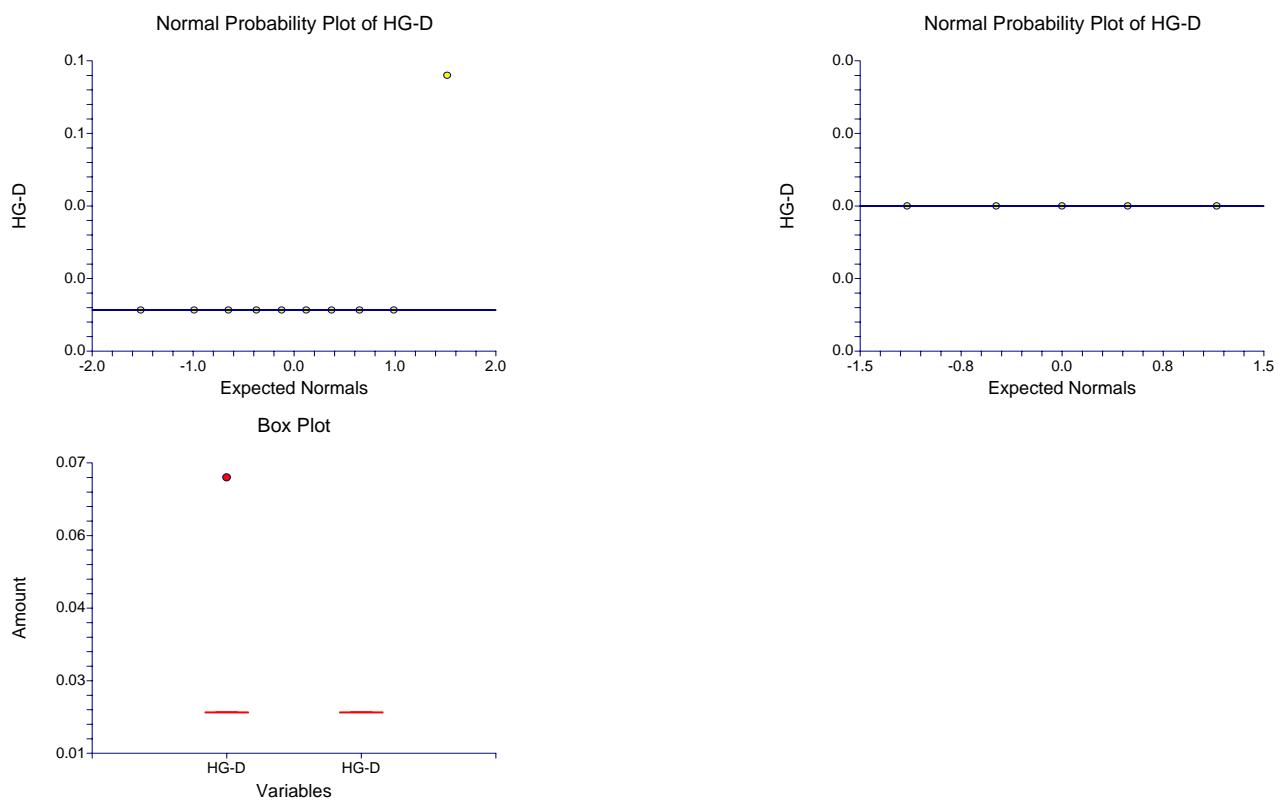
Histogram of HG-D



Histogram of HG-D



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MO-D	10	1.68	0.0421637	1.333333E-02	1.649838	1.710162
MO-D	5	2.02	4.472136E-02	0.02	1.964471	2.075529

Note: T-alpha (MO-D) = 2.2622, T-alpha (MO-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.34	4.296689E-02	2.353394E-02	-0.390842	-0.289158
Unequal	7.67	-0.34	6.146363E-02	2.403701E-02	-0.3958445	-0.2841555

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.3233

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-14.4472	0.000000	Reject Ho	1.000000	1.000000
Difference < 0	-14.4472	0.000000	Reject Ho	1.000000	1.000000
Difference > 0	-14.4472	1.000000	Accept Ho	0.000000	0.000000
Difference: (MO-D)-(MO-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-14.1449	0.000001	Reject Ho	1.000000	1.000000
Difference < 0	-14.1449	0.000000	Reject Ho	1.000000	1.000000
Difference > 0	-14.1449	1.000000	Accept Ho	0.000000	0.000000
Difference: (MO-D)-(MO-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MO-D)	-2.4949	0.012600	Reject normality
Kurtosis Normality (MO-D)	1.1232	0.261366	Cannot reject normality
Omnibus Normality (MO-D)	7.4860	0.023683	Reject normality
Skewness Normality (MO-D)	0.0000		
Kurtosis Normality (MO-D)		1.000000	Cannot reject normality
Omnibus Normality (MO-D)			
Variance-Ratio Equal-Variance Test	1.1250	0.806416	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0000	1.000000	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MO-D	10	1.7	1.6	1.7
MO-D	5	2		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MO-D	0	55	80	7.440238
MO-D	50	65	40	7.440238

Number Sets of Ties = 3, Multiplicity Factor = 570

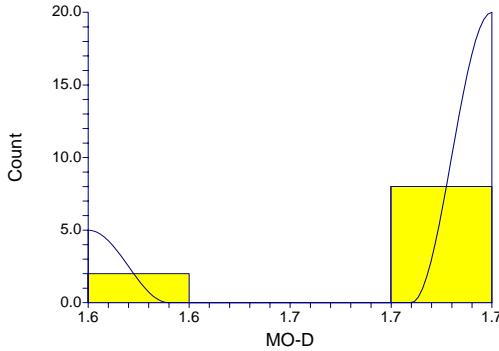
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.3601	0.000779	Reject Ho	3.2929	0.000992	Reject Ho
Diff<0			3.3601	0.000390	Reject Ho	3.2929	0.000496	Reject Ho
Diff>0			3.3601	0.999610	Accept Ho	3.4273	0.999695	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

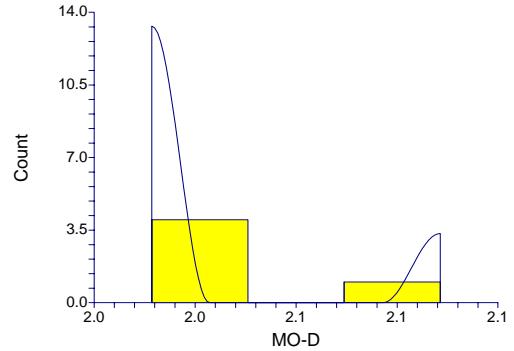
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	1.000000	0.6698	.050	Reject Ho	0.0007
D(1)<D(2)	1.000000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

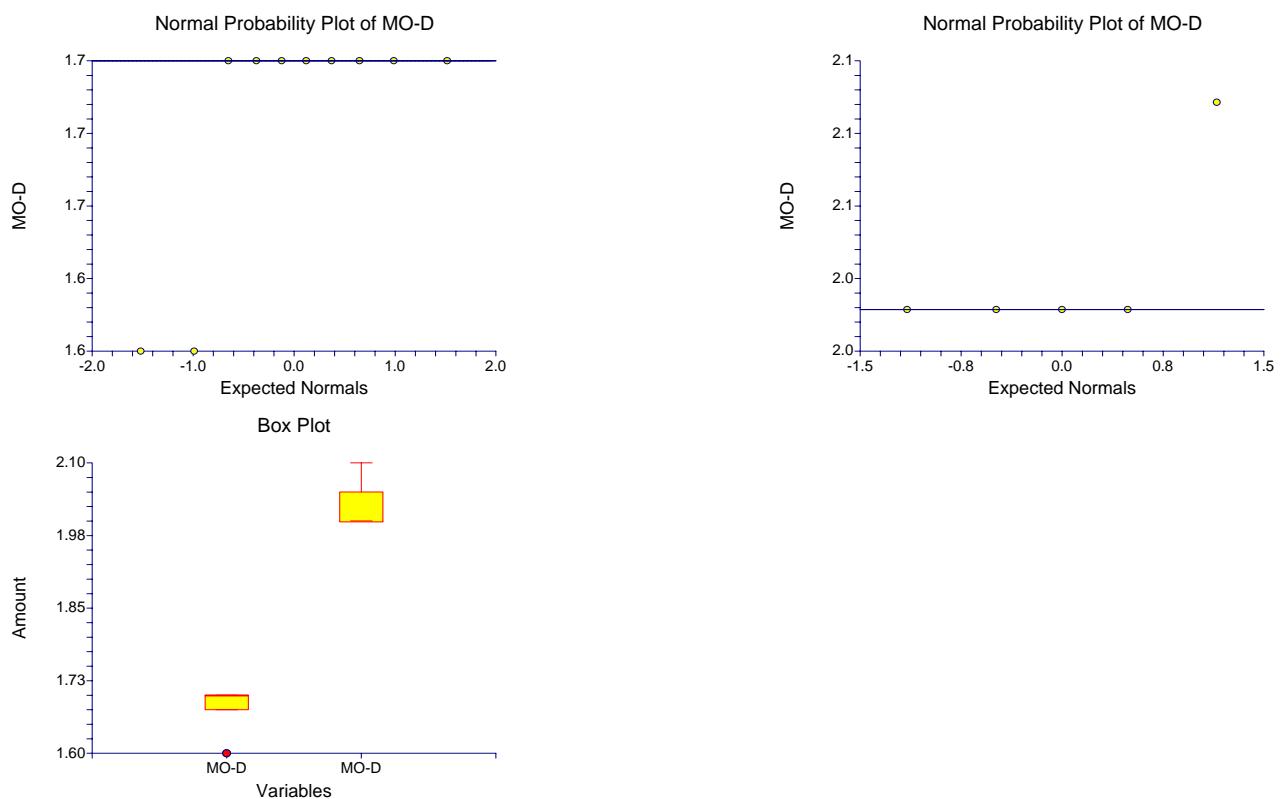
Histogram of MO-D



Histogram of MO-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NI-D	10	3.13	0.105935	3.349958E-02	3.054219	3.205781
NI-D	5	3.78	0.083666	3.741657E-02	3.676115	3.883885

Note: T-alpha (NI-D) = 2.2622, T-alpha (NI-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.65	9.961464E-02	5.456119E-02	-0.7678723	-0.5321277
Unequal	10.10	-0.65	0.1349897	5.022173E-02	-0.7617527	-0.5382473

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2252

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-11.9132	0.000000	Reject Ho	1.000000	1.000000
Difference < 0	-11.9132	0.000000	Reject Ho	1.000000	1.000000
Difference > 0	-11.9132	1.000000	Accept Ho	0.000000	0.000000
Difference: (NI-D)-(NI-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-12.9426	0.000000	Reject Ho	1.000000	1.000000
Difference < 0	-12.9426	0.000000	Reject Ho	1.000000	1.000000
Difference > 0	-12.9426	1.000000	Accept Ho	0.000000	0.000000
Difference: (NI-D)-(NI-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NI-D)	-0.0635	0.949387	Cannot reject normality
Kurtosis Normality (NI-D)	-1.0363	0.300081	Cannot reject normality
Omnibus Normality (NI-D)	1.0779	0.583371	Cannot reject normality
Skewness Normality (NI-D)	0.0000		
Kurtosis Normality (NI-D)		1.000000	Cannot reject normality
Omnibus Normality (NI-D)			
Variance-Ratio Equal-Variance Test	1.6032	0.685463	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.0833	0.316924	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NI-D	10	3.15	3	3.2
NI-D	5	3.8		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NI-D	0	55	80	8.040078
NI-D	50	65	40	8.040078

Number Sets of Ties = 5, Multiplicity Factor = 102

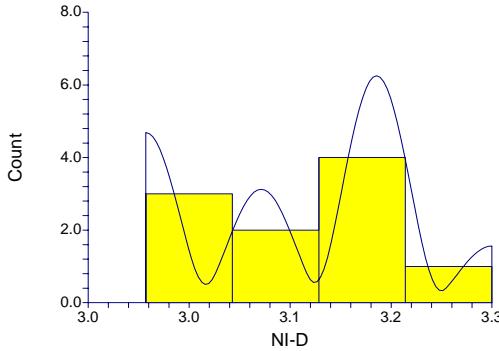
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.1094	0.001875	Reject Ho	3.0472	0.002310	Reject Ho
Diff<0			3.1094	0.000937	Reject Ho	3.0472	0.001155	Reject Ho
Diff>0			3.1094	0.999063	Accept Ho	3.1716	0.999242	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

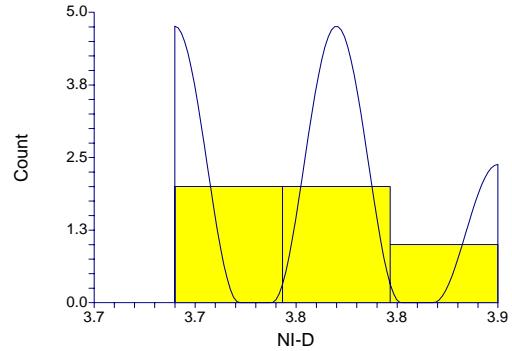
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	1.000000	0.6698	.050	Reject Ho	0.0007
D(1)<D(2)	1.000000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

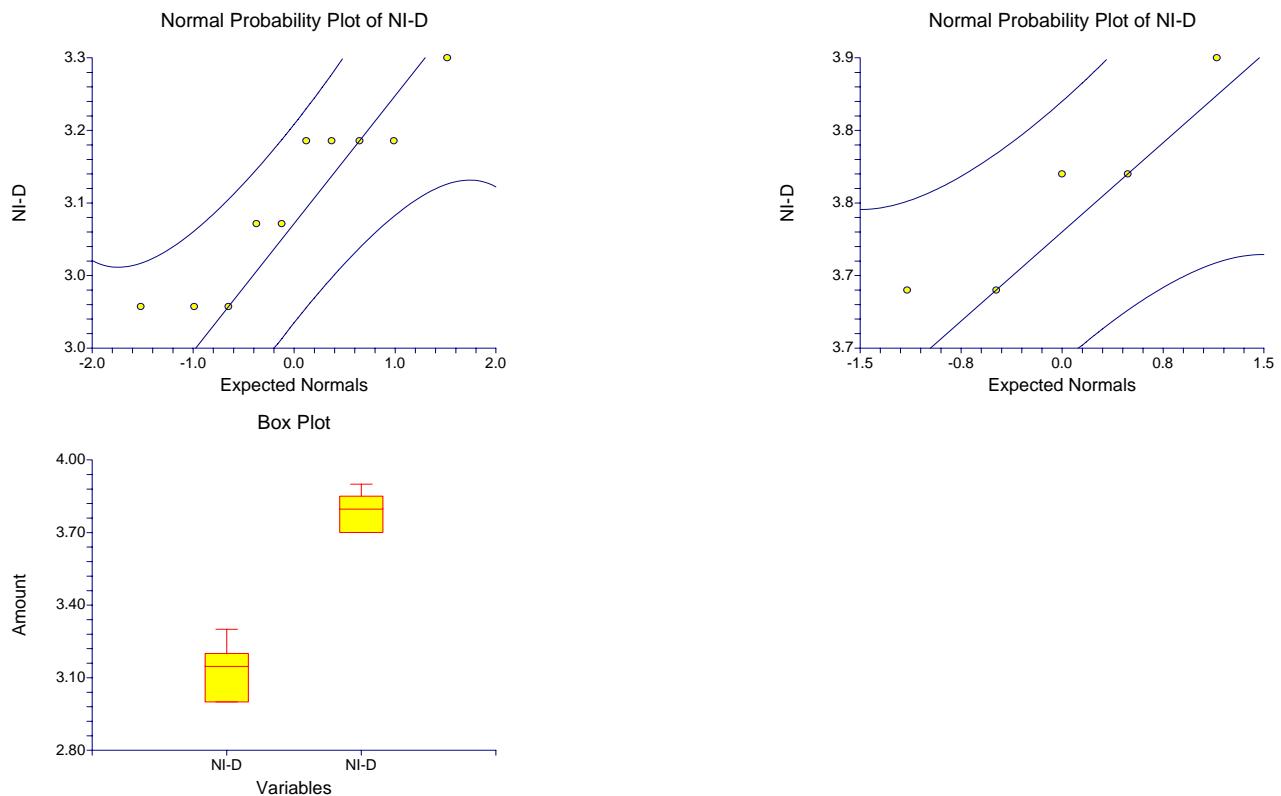
Histogram of NI-D



Histogram of NI-D



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
K-D	10	6755	349.6427	110.5667	6504.881	7005.119
K-D	5	7942	339.6616	151.9013	7520.254	8363.745

Note: T-alpha (K-D) = 2.2622, T-alpha (K-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-1187	346.6022	189.8418	-1597.128	-776.8716
Unequal	8.32	-1187	487.4628	187.8803	-1617.343	-756.6566

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2905

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-6.2526	0.000030	Reject Ho	0.999923	0.997573
Difference < 0	-6.2526	0.000015	Reject Ho	0.999989	0.999354
Difference > 0	-6.2526	0.999985	Accept Ho	0.000000	0.000000
Difference: (K-D)-(K-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-6.3179	0.000193	Reject Ho	0.999792	0.991119
Difference < 0	-6.3179	0.000097	Reject Ho	0.999978	0.997806
Difference > 0	-6.3179	0.999903	Accept Ho	0.000000	0.000000
Difference: (K-D)-(K-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (K-D)	0.3038	0.761297	Cannot reject normality
Kurtosis Normality (K-D)	0.9197	0.357751	Cannot reject normality
Omnibus Normality (K-D)	0.9381	0.625611	Cannot reject normality
Skewness Normality (K-D)	0.0000		
Kurtosis Normality (K-D)		1.000000	Cannot reject normality
Omnibus Normality (K-D)			
Variance-Ratio Equal-Variance Test	1.0596	1.036575	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0204	0.888492	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
K-D	10	6815	6380	6920
K-D	5	7970		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
K-D	0	55	80	8.157672
K-D	50	65	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

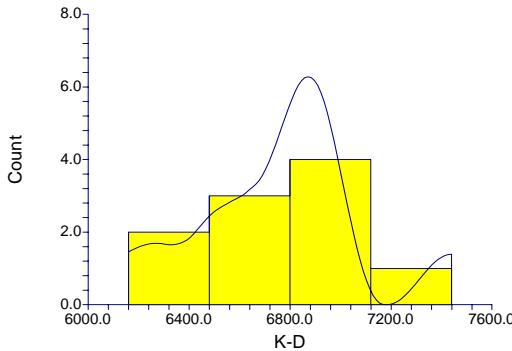
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.0646	0.002180	Reject Ho	3.0033	0.002671	Reject Ho
Diff<0			3.0646	0.001090	Reject Ho	3.0033	0.001335	Reject Ho
Diff>0			3.0646	0.998910	Accept Ho	3.1259	0.999114	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

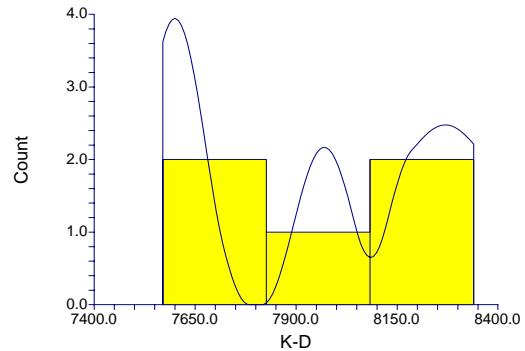
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	1.000000	0.6698	.050	Reject Ho	0.0007
D(1)<D(2)	1.000000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

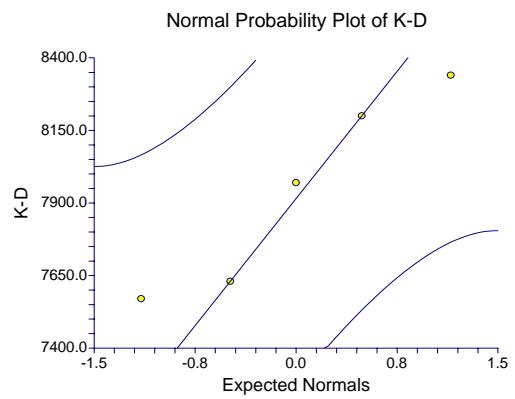
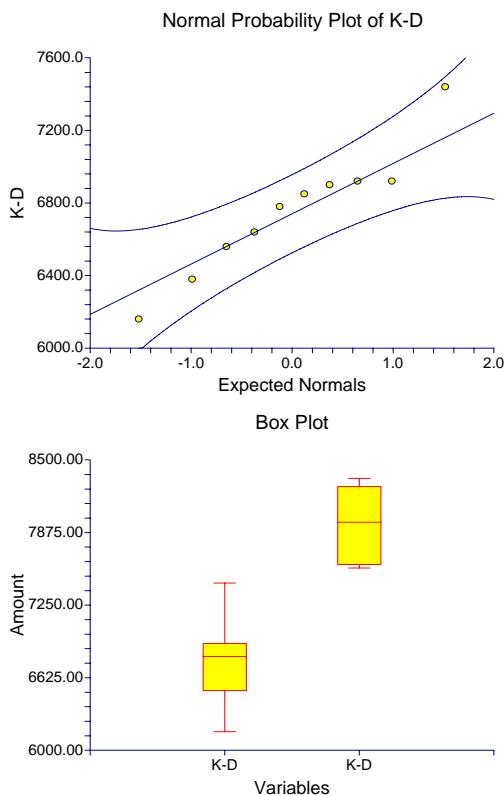
Histogram of K-D



Histogram of K-D



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SE-D	10	1.23	0.2637339	8.339997E-02	1.041336	1.418664
SE-D	5	2.07	0.7479973	0.3345146	1.141239	2.998761

Note: T-alpha (SE-D) = 2.2622, T-alpha (SE-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.84	0.4693695	0.2570843	-1.395397	-0.2846033
Unequal	4.50	-0.84	0.7931302	0.3447543	-1.756325	7.632507E-02

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.6579

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-3.2674	0.006120	Reject Ho	0.855096	0.607878
Difference < 0	-3.2674	0.003060	Reject Ho	0.925876	0.724302
Difference > 0	-3.2674	0.996940	Accept Ho	0.000001	0.000000
Difference: (SE-D)-(SE-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.4365	0.064398	Accept Ho	0.483210	0.174488
Difference < 0	-2.4365	0.032199	Reject Ho	0.659165	0.282727
Difference > 0	-2.4365	0.967801	Accept Ho	0.000075	0.000010
Difference: (SE-D)-(SE-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SE-D)	1.2576	0.208551	Cannot reject normality
Kurtosis Normality (SE-D)	0.3871	0.698697	Cannot reject normality
Omnibus Normality (SE-D)	1.7313	0.420780	Cannot reject normality
Skewness Normality (SE-D)	0.0000		
Kurtosis Normality (SE-D)		1.000000	Cannot reject normality
Omnibus Normality (SE-D)			
Variance-Ratio Equal-Variance Test	8.0439	0.009639	Reject equal variances
Modified-Levene Equal-Variance Test	0.7913	0.389882	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
SE-D	10	1.2	1	1.55
SE-D	5	2.3		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
SE-D	10	65	80	8.143066
SE-D	40	55	40	8.143066

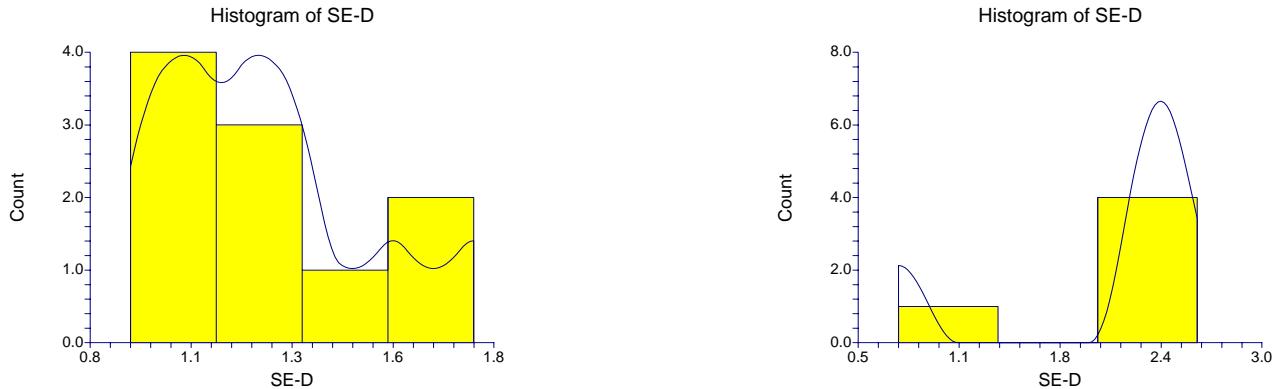
Number Sets of Ties = 3, Multiplicity Factor = 18

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.8421	0.065467	Accept Ho	1.7807	0.074969	Accept Ho
Diff<0			1.8421	0.032733	Reject Ho	1.7807	0.037484	Reject Ho
Diff>0			1.8421	0.967267	Accept Ho	1.9035	0.971510	Accept Ho

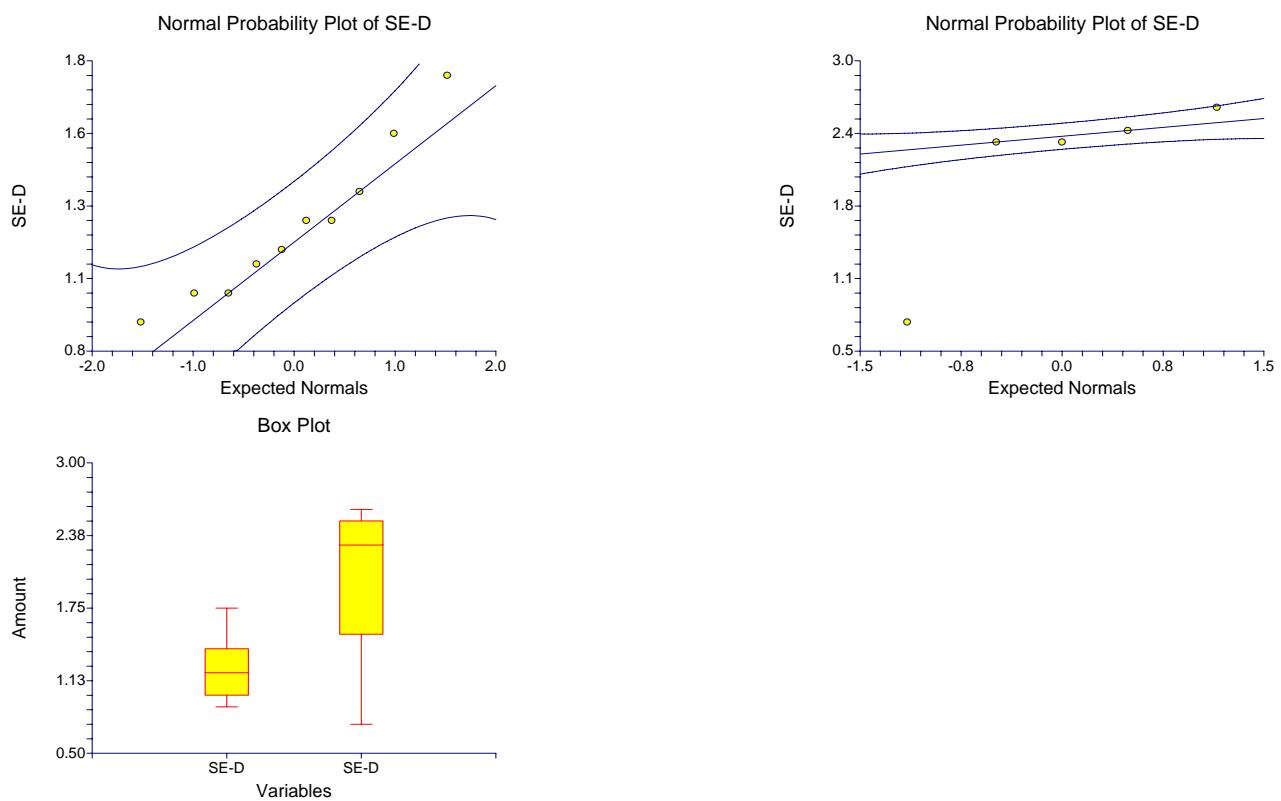
Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.800000	0.6698	.050	Reject Ho	0.0193
D(1)<D(2)	0.800000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NA-D	10	62010	3094.242	978.4852	59796.51	64223.49
NA-D	5	70400	2218.107	991.9677	67645.86	73154.14

Note: T-alpha (NA-D) = 2.2622, T-alpha (NA-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-8390	2853.459	1562.904	-11766.45	-5013.551
Unequal	10.96	-8390	3807.142	1393.353	-11458.13	-5321.867

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2020

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-5.3682	0.000128	Reject Ho	0.998561	0.980717
Difference < 0	-5.3682	0.000064	Reject Ho	0.999688	0.992765
Difference > 0	-5.3682	0.999936	Accept Ho	0.000000	0.000000
Difference: (NA-D)-(NA-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-6.0214	0.000088	Reject Ho	0.999747	0.993123
Difference < 0	-6.0214	0.000044	Reject Ho	0.999963	0.998033
Difference > 0	-6.0214	0.999956	Accept Ho	0.000000	0.000000
Difference: (NA-D)-(NA-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NA-D)	-0.0919	0.926749	Cannot reject normality
Kurtosis Normality (NA-D)	0.2809	0.778812	Cannot reject normality
Omnibus Normality (NA-D)	0.0873	0.957270	Cannot reject normality
Skewness Normality (NA-D)	0.0000		
Kurtosis Normality (NA-D)		1.000000	Cannot reject normality
Omnibus Normality (NA-D)			
Variance-Ratio Equal-Variance Test	1.9460	0.544377	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.5232	0.482291	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NA-D	10	62050	58400	65200
NA-D	5	70300		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NA-D	0.5	55.5	80	8.157672
NA-D	49.5	64.5	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

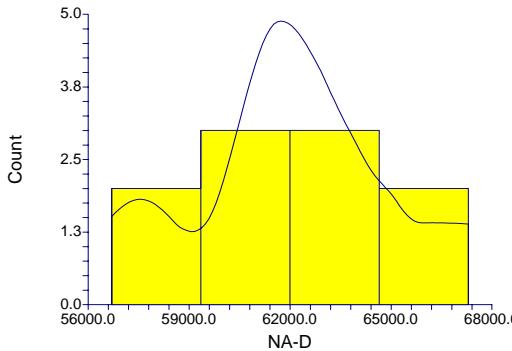
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.0033	0.002671	Reject Ho	2.9420	0.003261	Reject Ho
Diff<0			3.0033	0.001335	Reject Ho	2.9420	0.001630	Reject Ho
Diff>0			3.0033	0.998665	Accept Ho	3.0646	0.998910	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

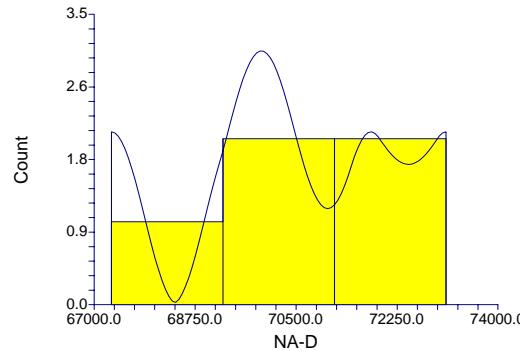
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.900000	0.6698	.050	Reject Ho	0.0040
D(1)<D(2)	0.900000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

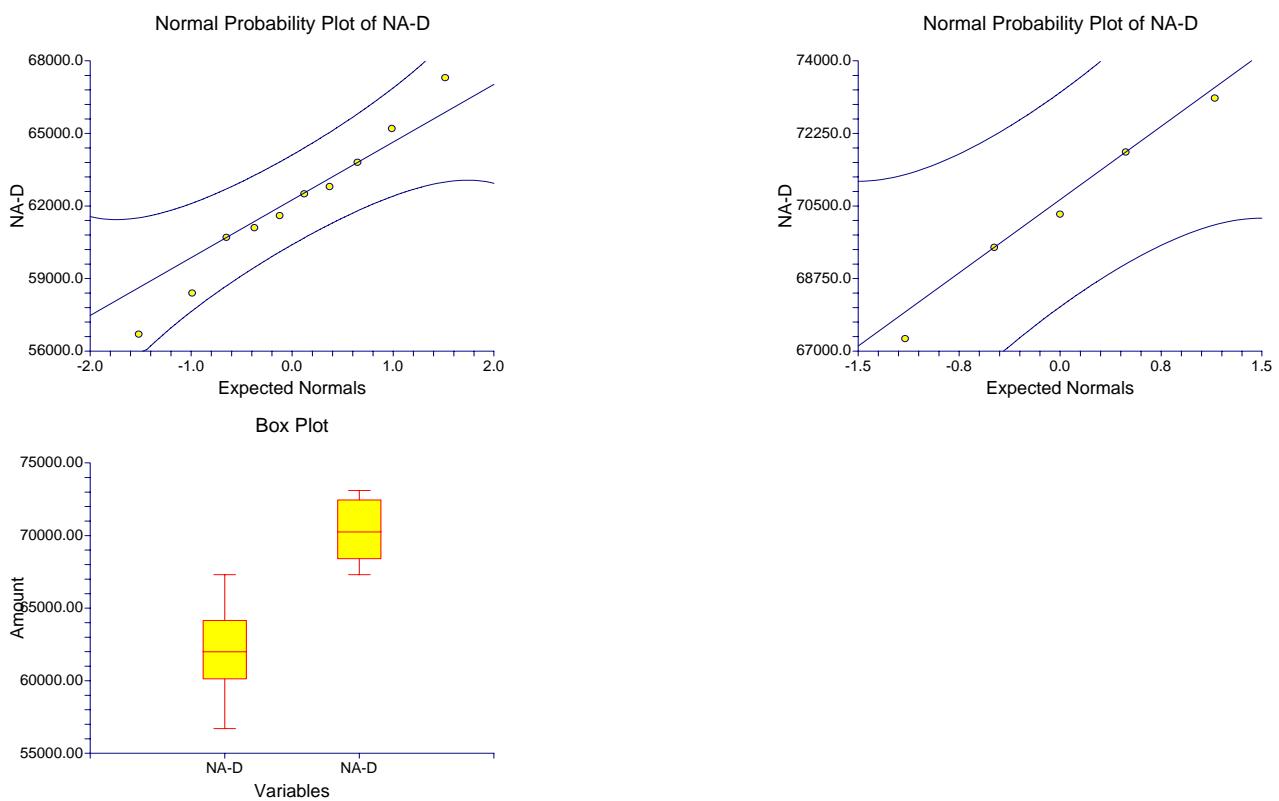
Histogram of NA-D



Histogram of NA-D



Two-Sample Test Report



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TL-D	10	0.05005	0.1062982	3.361443E-02	-2.599114E-02	0.1260911
TL-D	5	0.0065	0	0	0.0065	0.0065

Note: T-alpha (TL-D) = 2.2622, T-alpha (TL-D) = 0.0000

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.04355	8.844543E-02	4.844356E-02	-6.110594E-02	0.1482059
Unequal	9.00	0.04355	0.1062982	3.361443E-02	-3.249114E-02	0.1195911

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2622

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8990	0.385010	Accept Ho	0.132699	0.037547
Difference < 0	0.8990	0.807495	Accept Ho	0.006224	0.000844
Difference > 0	0.8990	0.192505	Accept Ho	0.214103	0.064671
Difference: (TL-D)-(TL-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.2956	0.227363	Accept Ho	0.212898	0.066850
Difference < 0	1.2956	0.886318	Accept Ho	0.002182	0.000275
Difference > 0	1.2956	0.113682	Accept Ho	0.327638	0.112168
Difference: (TL-D)-(TL-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TL-D)	3.8859	0.000102	Reject normality
Kurtosis Normality (TL-D)	3.4934	0.000477	Reject normality
Omnibus Normality (TL-D)	27.3036	0.000001	Reject normality
Skewness Normality (TL-D)	0.0000		
Kurtosis Normality (TL-D)		1.000000	Cannot reject normality
Omnibus Normality (TL-D)			
Variance-Ratio Equal-Variance Test	9999800001.00000.000000		Reject equal variances
Modified-Levene Equal-Variance Test	0.8074	0.385234	Cannot reject equal variances

Two-Sample Test Report

Page 2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TL-D	10	0.01175	0.0065	0.043
TL-D	5	0.0065		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TL-D	40	95	80	7.237469
TL-D	10	25	40	7.237469

Number Sets of Ties = 1, Multiplicity Factor = 720

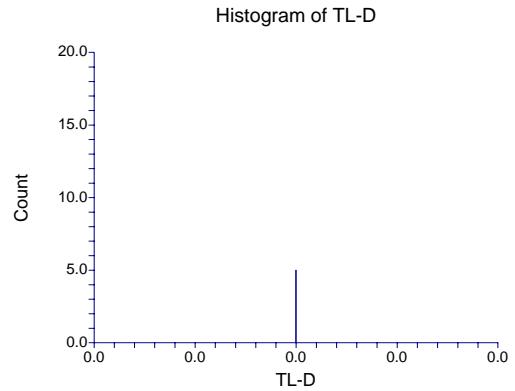
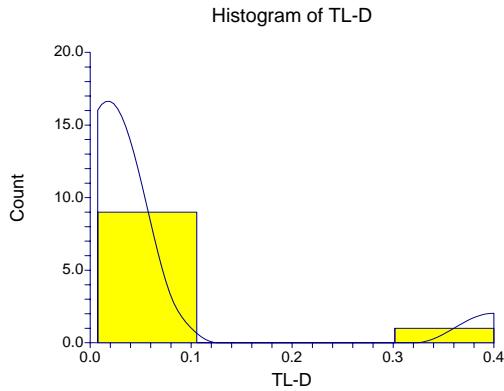
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-2.0725	0.038214	Reject Ho	-2.0035	0.045128	Reject Ho
Diff<0			-2.0725	0.980893	Accept Ho	-2.1416	0.983888	Accept Ho
Diff>0			-2.0725	0.019107	Reject Ho	-2.0035	0.022564	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

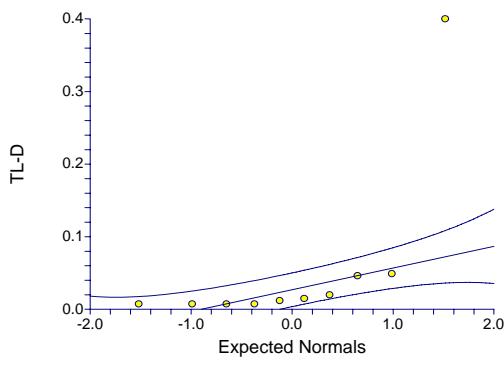
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.600000	0.6698	.050	Accept Ho	0.1658
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.600000	0.6698	.025	Accept Ho	

Plots Section

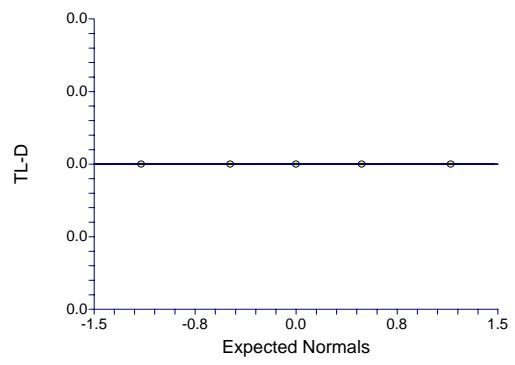
Two-Sample Test Report



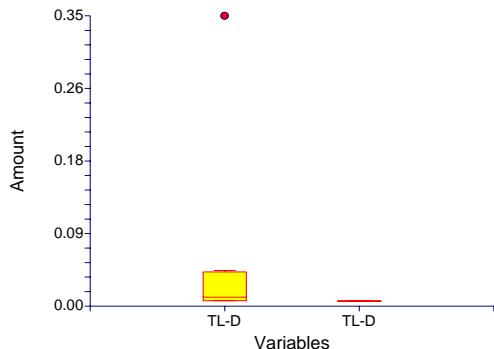
Normal Probability Plot of TL-D



Normal Probability Plot of TL-D



Box Plot



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U-D	10	0.00375	3.80971E-03	1.204736E-03	1.024698E-03	6.475302E-03
U-D	5	0.015	1.541103E-03	6.892025E-04	1.308647E-02	1.691353E-02

Note: T-alpha (U-D) = 2.2622, T-alpha (U-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.01125	3.283115E-03	1.798236E-03	-1.513485E-02	-7.365147E-03
Unequal	12.78	-0.01125	4.109609E-03	1.387944E-03	-1.425382E-02	-8.246176E-03

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1642

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-6.2561	0.000029	Reject Ho	0.999924	0.997595
Difference < 0	-6.2561	0.000015	Reject Ho	0.999989	0.999361
Difference > 0	-6.2561	0.999985	Accept Ho	0.000000	0.000000
Difference: (U-D)-(U-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-8.1055	0.000002	Reject Ho	1.000000	0.999993
Difference < 0	-8.1055	0.000001	Reject Ho	1.000000	0.999999
Difference > 0	-8.1055	0.999999	Accept Ho	0.000000	0.000000
Difference: (U-D)-(U-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U-D)	3.0268	0.002472	Reject normality
Kurtosis Normality (U-D)	2.5797	0.009889	Reject normality
Omnibus Normality (U-D)	15.8162	0.000368	Reject normality
Skewness Normality (U-D)	0.0000		
Kurtosis Normality (U-D)		1.000000	Cannot reject normality
Omnibus Normality (U-D)			
Variance-Ratio Equal-Variance Test	6.1111	0.096877	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.5881	0.456846	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U-D	10	0.002	0.0015	0.0065
U-D	5	0.015		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U-D	0.5	55.5	80	8.002975
U-D	49.5	64.5	40	8.002975

Number Sets of Ties = 3, Multiplicity Factor = 132

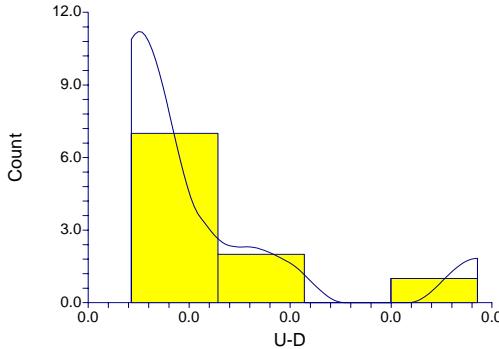
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			3.0614	0.002203	Reject Ho	2.9989	0.002710	Reject Ho
Diff<0			3.0614	0.001102	Reject Ho	2.9989	0.001355	Reject Ho
Diff>0			3.0614	0.998898	Accept Ho	3.1238	0.999107	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

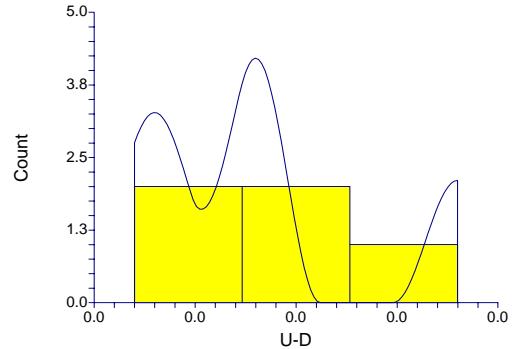
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.900000	0.6698	.050	Reject Ho	0.0040
D(1)<D(2)	0.900000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

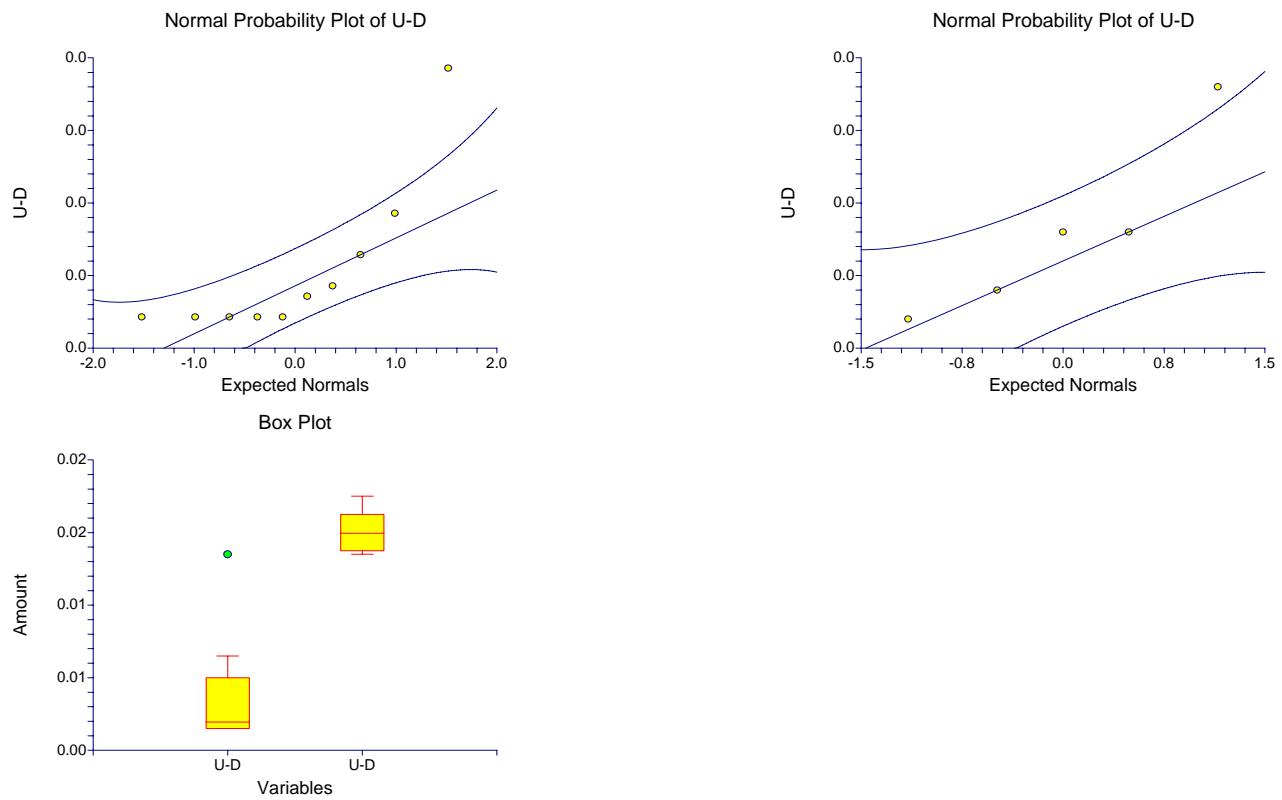
Histogram of U-D



Histogram of U-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
V-D	10	0.438	0.2594781	8.205418E-02	0.2523805	0.6236194
V-D	5	0.362	0.1050952	0.047	0.2315071	0.4924929

Note: T-alpha (V-D) = 2.2622, T-alpha (V-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.076	0.2236309	0.1224877	-0.1886185	0.3406186
Unequal	12.78	0.076	0.2799534	9.456156E-02	-0.128647	0.280647

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1642

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6205	0.545672	Accept Ho	0.088772	0.022116
Difference < 0	0.6205	0.727164	Accept Ho	0.012732	0.001940
Difference > 0	0.6205	0.272836	Accept Ho	0.145434	0.038608
Difference: (V-D)-(V-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8037	0.436260	Accept Ho	0.115563	0.031277
Difference < 0	0.8037	0.781870	Accept Ho	0.008023	0.001134
Difference > 0	0.8037	0.218130	Accept Ho	0.188551	0.054401
Difference: (V-D)-(V-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (V-D)	2.5021	0.012347	Reject normality
Kurtosis Normality (V-D)	1.1453	0.252101	Cannot reject normality
Omnibus Normality (V-D)	7.5720	0.022686	Reject normality
Skewness Normality (V-D)	0.0000		
Kurtosis Normality (V-D)		1.000000	Cannot reject normality
Omnibus Normality (V-D)			
Variance-Ratio Equal-Variance Test	6.0959	0.097292	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.3850	0.545672	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
V-D	10	0.315	0.315	0.91
V-D	5	0.315		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
V-D	26	81	80	5.711309
V-D	24	39	40	5.711309

Number Sets of Ties = 1, Multiplicity Factor = 1716

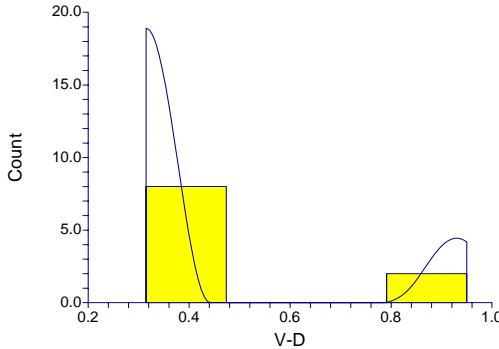
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.1751	0.861008	Accept Ho	-0.0875	0.930238	Accept Ho
Diff<0			-0.1751	0.569496	Accept Ho	-0.2626	0.603585	Accept Ho
Diff>0			-0.1751	0.430504	Accept Ho	-0.0875	0.465119	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

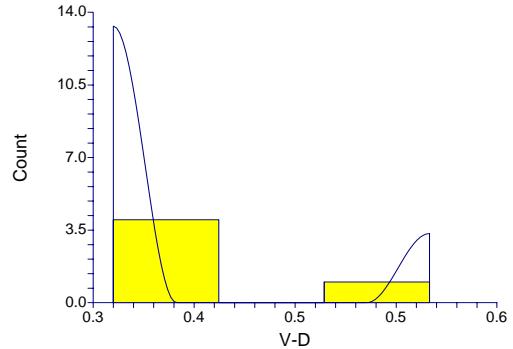
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.6698	.050	Accept Ho	0.9997
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

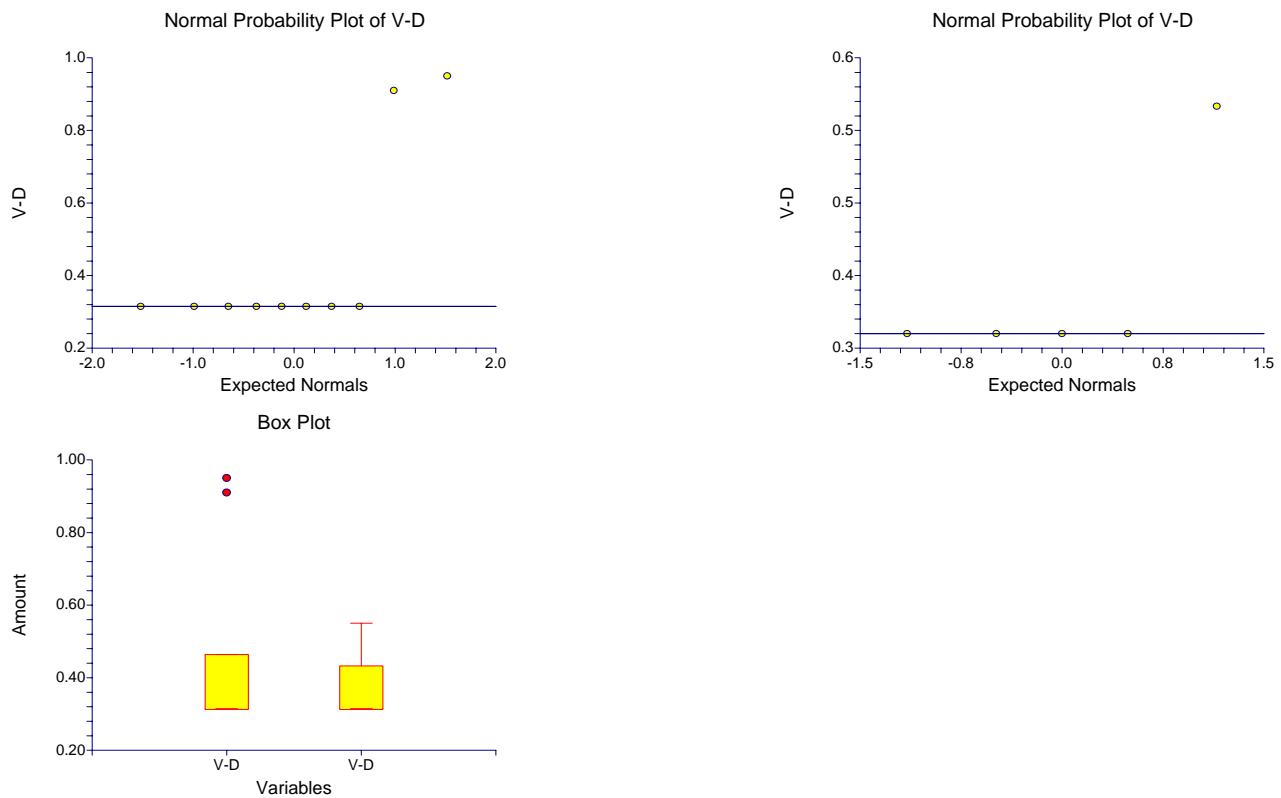
Histogram of V-D



Histogram of V-D



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZN-D	10	3.785	0.9798101	0.3098432	3.084086	4.485914
ZN-D	5	6.92	3.646334	1.63069	2.392479	11.44752

Note: T-alpha (ZN-D) = 2.2622, T-alpha (ZN-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-3.135	2.180742	1.194441	-5.715434	-0.5545661
Unequal	4.29	-3.135	3.775682	1.659865	-7.622638	1.352638

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7036

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.6247	0.020999	Reject Ho	0.679973	0.389345
Difference < 0	-2.6247	0.010500	Reject Ho	0.799420	0.510102
Difference > 0	-2.6247	0.989500	Accept Ho	0.000017	0.000001
Difference: (ZN-D)-(ZN-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.8887	0.127085	Accept Ho	0.316037	0.095235
Difference < 0	-1.8887	0.063542	Accept Ho	0.476972	0.165068
Difference > 0	-1.8887	0.936458	Accept Ho	0.000496	0.000071
Difference: (ZN-D)-(ZN-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZN-D)	2.3539	0.018578	Reject normality
Kurtosis Normality (ZN-D)	1.8260	0.067849	Cannot reject normality
Omnibus Normality (ZN-D)	8.8751	0.011825	Reject normality
Skewness Normality (ZN-D)	0.0000		
Kurtosis Normality (ZN-D)		1.000000	Cannot reject normality
Omnibus Normality (ZN-D)			
Variance-Ratio Equal-Variance Test	13.8493	0.001389	Reject equal variances
Modified-Levene Equal-Variance Test	4.1845	0.061583	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZN-D	10	3.425	3.1	4.65
ZN-D	5	4.75		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZN-D	6	61	80	8.157672
ZN-D	44	59	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

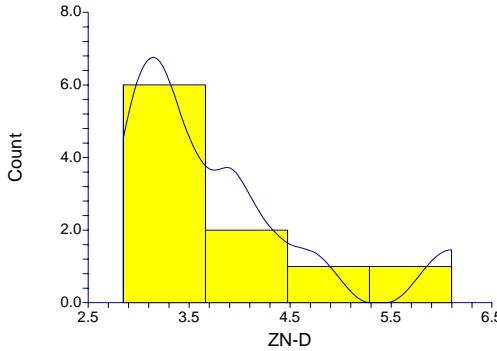
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.3291	0.019854	Reject Ho	2.2678	0.023341	Reject Ho
Diff<0			2.3291	0.009927	Reject Ho	2.2678	0.011671	Reject Ho
Diff>0			2.3291	0.990073	Accept Ho	2.3904	0.991585	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

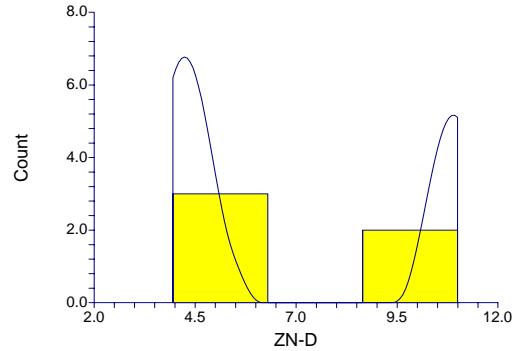
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.700000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

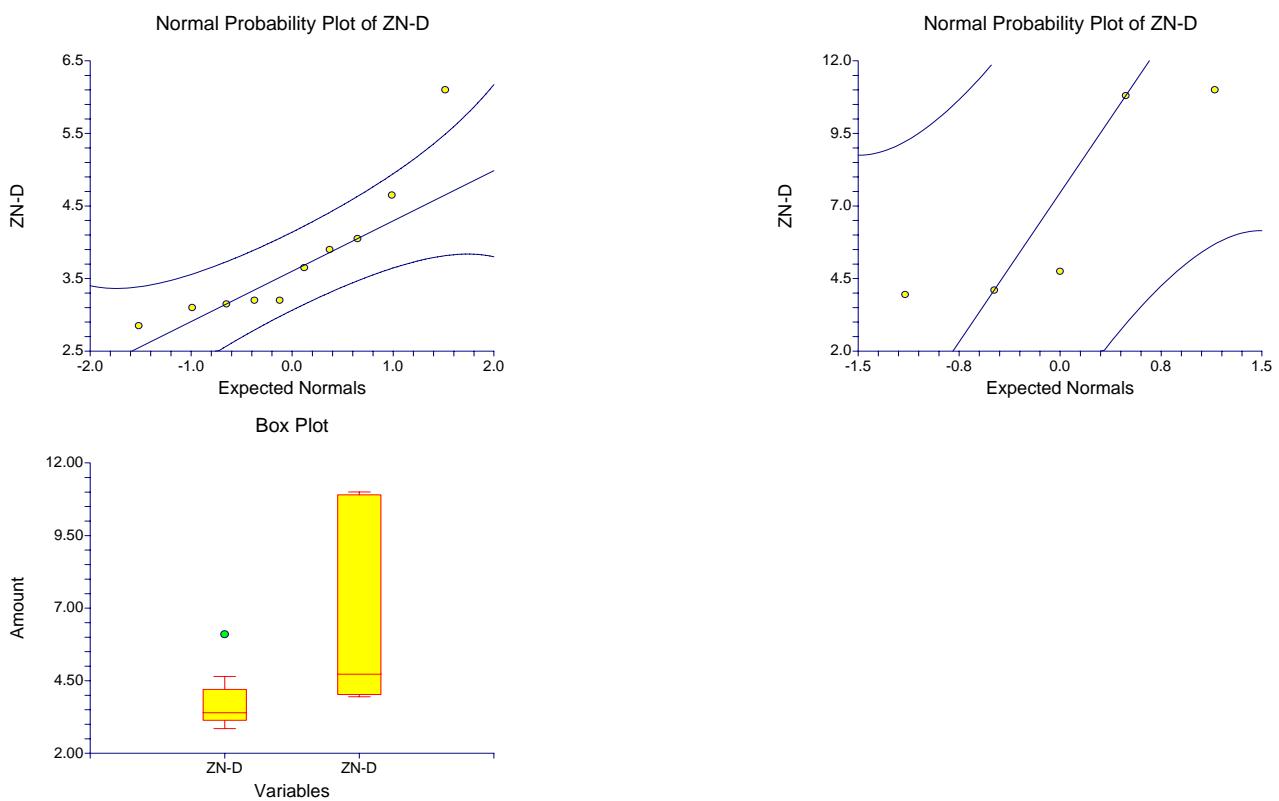
Histogram of ZN-D



Histogram of ZN-D



Two-Sample Test Report



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZR-D	10	0.3035	0.277319	8.769597E-02	0.1051179	0.5018821
ZR-D	5	0.404	0.5605065	0.2506661	-0.2919607	1.099961

Note: T-alpha (ZR-D) = 2.2622, T-alpha (ZR-D) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.1005	0.3871814	0.212068	-0.558645	0.357645
Unequal	5.01	-0.1005	0.6253586	0.2655637	-0.7829169	0.5819169

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.5697

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.4739	0.643428	Accept Ho	0.072448	0.016837
Difference < 0	-0.4739	0.321714	Accept Ho	0.116006	0.028782
Difference > 0	-0.4739	0.678286	Accept Ho	0.018086	0.002935
Difference: (ZR-D)-(ZR-D)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.3784	0.720622	Accept Ho	0.061227	0.012908
Difference < 0	-0.3784	0.360311	Accept Ho	0.094326	0.020970
Difference > 0	-0.3784	0.639689	Accept Ho	0.024020	0.004363
Difference: (ZR-D)-(ZR-D)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZR-D)	1.4553	0.145573	Cannot reject normality
Kurtosis Normality (ZR-D)	-0.9005	0.367849	Cannot reject normality
Omnibus Normality (ZR-D)	2.9290	0.231199	Cannot reject normality
Skewness Normality (ZR-D)	0.0000		
Kurtosis Normality (ZR-D)		1.000000	Cannot reject normality
Omnibus Normality (ZR-D)			
Variance-Ratio Equal-Variance Test	4.0851	0.073999	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.2389	0.633109	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZR-D	10	0.1625	0.08	0.7
ZR-D	5	0.15		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZR-D	24.5	79.5	80	8.157672
ZR-D	25.5	40.5	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

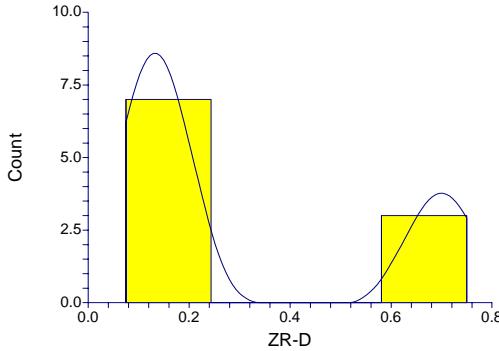
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.0613	0.951127	Accept Ho	0.0000	1.000000	Accept Ho
Diff<0			0.0613	0.475563	Accept Ho	0.0000	0.500000	Accept Ho
Diff>0			0.0613	0.524437	Accept Ho	0.1226	0.548782	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

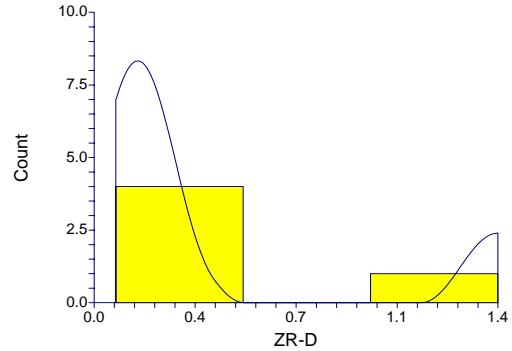
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.6698	.050	Accept Ho	0.9997
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

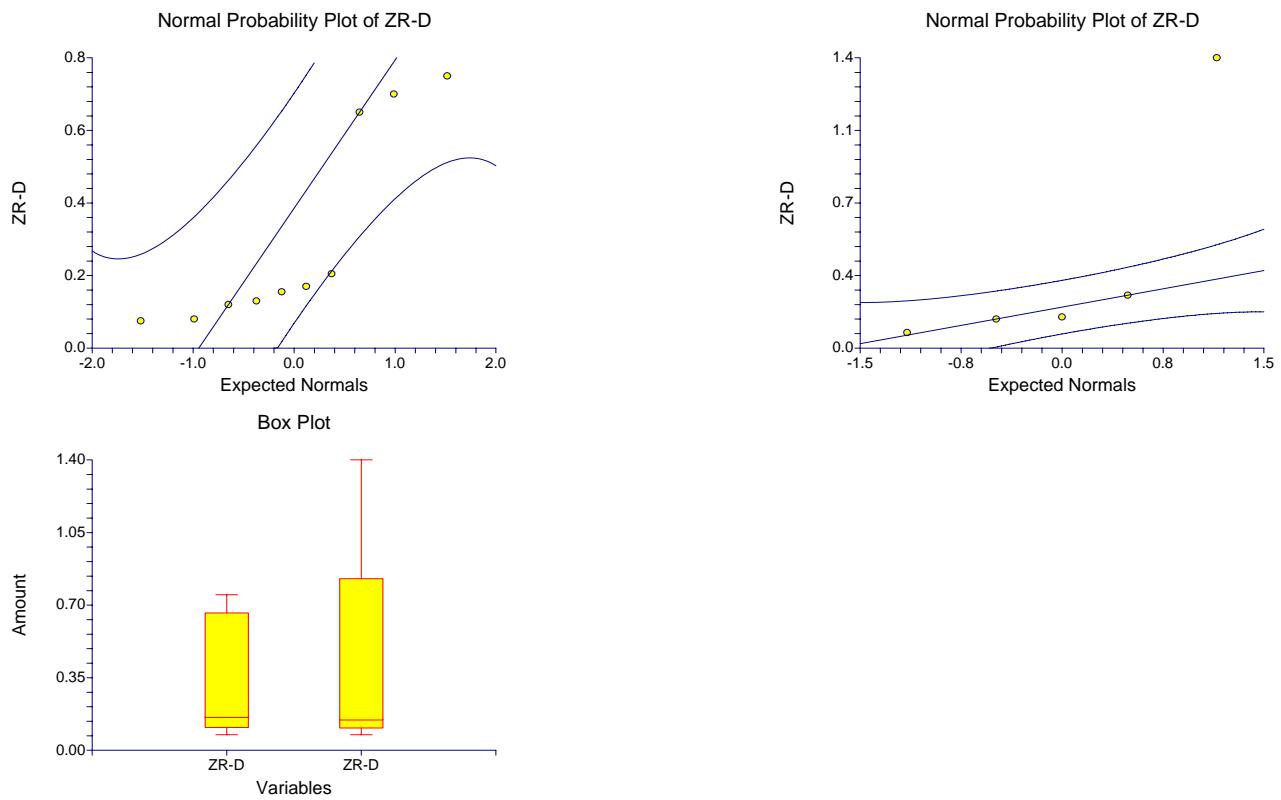
Histogram of ZR-D



Histogram of ZR-D



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MEK	10	0.022115	2.011644E-02	6.361377E-03	7.724566E-03	3.650543E-02
MEK	5	0.00544	3.464535E-03	1.549387E-03	1.138212E-03	9.741788E-03

Note: T-alpha (MEK) = 2.2622, T-alpha (MEK) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.016675	1.684785E-02	9.227949E-03	-3.260773E-03	3.661077E-02
Unequal	10.02	0.016675	0.0204126	6.547344E-03	2.090581E-03	3.125942E-02

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2275

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.8070	0.093950	Accept Ho	0.387527	0.160901
Difference < 0	1.8070	0.953025	Accept Ho	0.000384	0.000036
Difference > 0	1.8070	0.046975	Reject Ho	0.526772	0.240924
Difference: (MEK)-(MEK)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.5468	0.028979	Reject Ho	0.632630	0.330272
Difference < 0	2.5468	0.985510	Accept Ho	0.000027	0.000002
Difference > 0	2.5468	0.014490	Reject Ho	0.765674	0.451913
Difference: (MEK)-(MEK)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MEK)	1.7908	0.073325	Cannot reject normality
Kurtosis Normality (MEK)	0.9769	0.328594	Cannot reject normality
Omnibus Normality (MEK)	4.1614	0.124842	Cannot reject normality
Skewness Normality (MEK)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (MEK)			
Omnibus Normality (MEK)			
Variance-Ratio Equal-Variance Test	33.7142	0.004064	Reject equal variances
Modified-Levene Equal-Variance Test	3.4999	0.084050	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MEK	10	0.0135	0.0064	0.038
MEK	5	0.0052		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MEK	43	98	80	8.164966
MEK	7	22	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

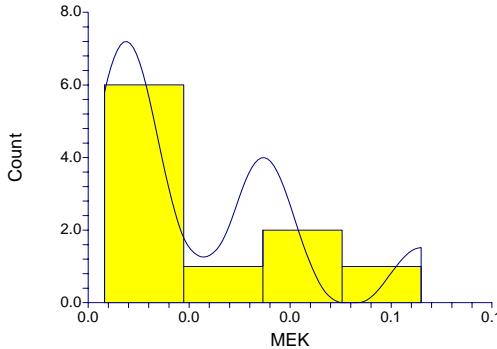
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.027972	Reject Ho	-2.2045	0.027486	Reject Ho	-2.1433	0.032089	Reject Ho
Diff<0	0.986014	Accept Ho	-2.2045	0.986257	Accept Ho	-2.2658	0.988268	Accept Ho
Diff>0	0.013986	Reject Ho	-2.2045	0.013743	Reject Ho	-2.1433	0.016044	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

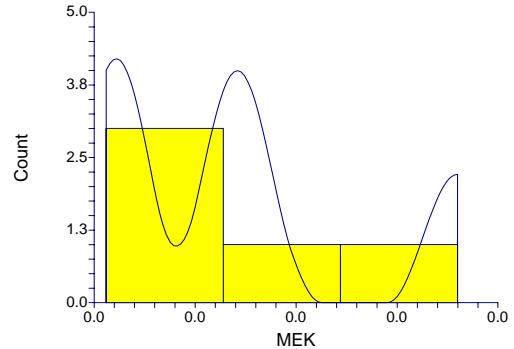
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.700000	0.6698	.025	Reject Ho	

Plots Section

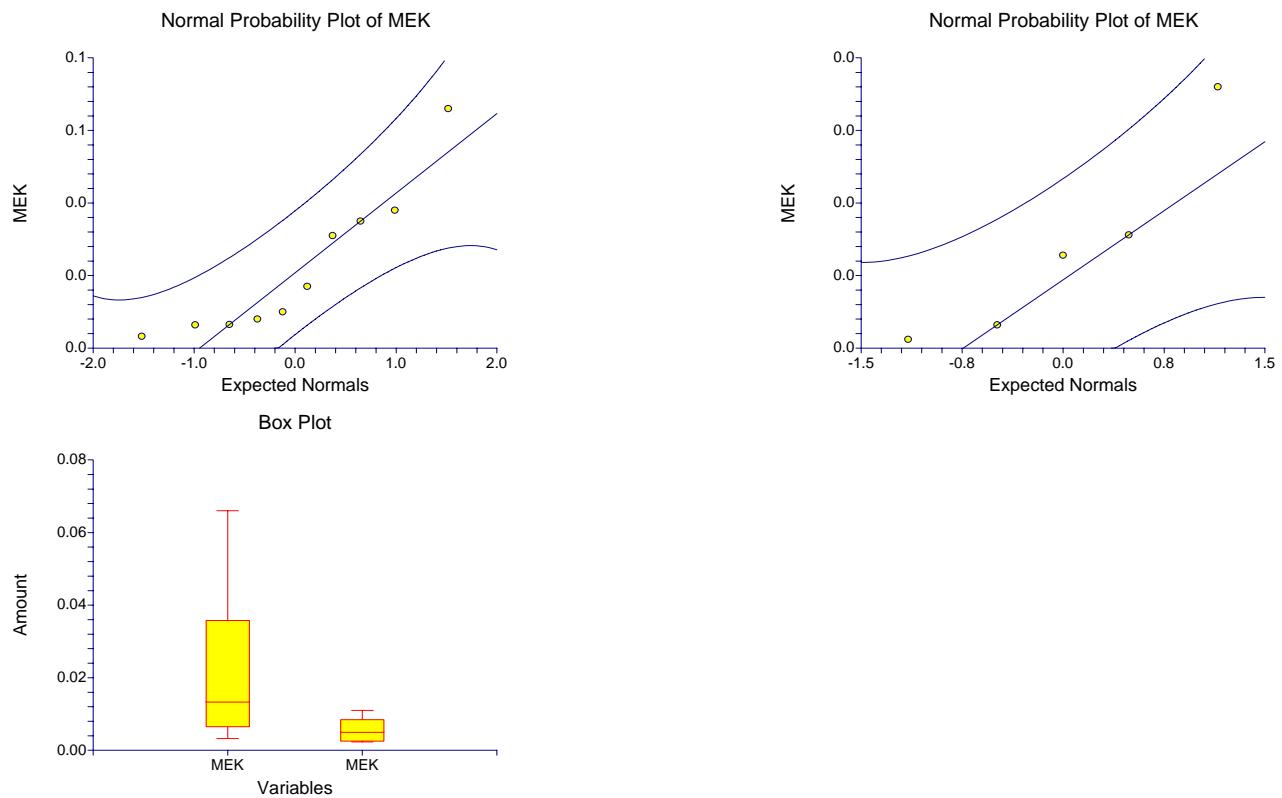
Histogram of MEK



Histogram of MEK



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TBUTMEE	10	0.00027	3.299832E-05	1.043498E-05	2.463944E-04	2.936056E-04
TBUTMEE	5	0.000258	1.095445E-05	4.89898E-06	2.443983E-04	2.716017E-04

Note: T-alpha (TBUTMEE) = 2.2622, T-alpha (TBUTMEE) = 2.7764

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption Equal	13	0.000012	2.812062E-05	1.54023E-05	-2.127464E-05	4.527464E-05
Unequal	12.08	0.000012	3.476908E-05	1.152774E-05	-1.30975E-05	3.70975E-05

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1771

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7791	0.449869	Accept Ho	0.111687	0.029947
Difference < 0	0.7791	0.775066	Accept Ho	0.008536	0.001217
Difference > 0	0.7791	0.224934	Accept Ho	0.182505	0.052143
Difference: (TBUTMEE)-(TBUTMEE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0410	0.318271	Accept Ho	0.160405	0.047820
Difference < 0	1.0410	0.840864	Accept Ho	0.004262	0.000552
Difference > 0	1.0410	0.159136	Accept Ho	0.254045	0.081252
Difference: (TBUTMEE)-(TBUTMEE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TBUTMEE)	1.7549	0.079277	Cannot reject normality
Kurtosis Normality (TBUTMEE)	46.0632	0.000000	Reject normality
Omnibus Normality (TBUTMEE)	2124.8960	0.000000	Reject normality
Skewness Normality (TBUTMEE)	0.0000		
Kurtosis Normality (TBUTMEE)		1.000000	Cannot reject normality
Omnibus Normality (TBUTMEE)			
Variance-Ratio Equal-Variance Test	9.0741	0.048334	Reject equal variances
Modified-Levene Equal-Variance Test	0.6070	0.449869	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TBUTMEE	10	0.00025	0.00025	0.00032
TBUTMEE	5	0.00025		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TBUTMEE	25.5	80.5	80	6.848705
TBUTMEE	24.5	39.5	40	6.848705

Number Sets of Ties = 2, Multiplicity Factor = 996

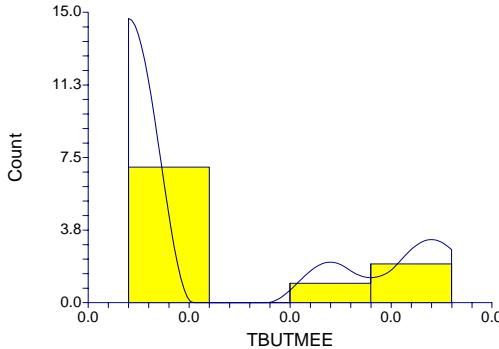
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.0730	0.941801	Accept Ho	0.0000	1.000000	Accept Ho
Diff<0			-0.0730	0.529100	Accept Ho	-0.1460	0.558044	Accept Ho
Diff>0			-0.0730	0.470900	Accept Ho	0.0000	0.500000	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

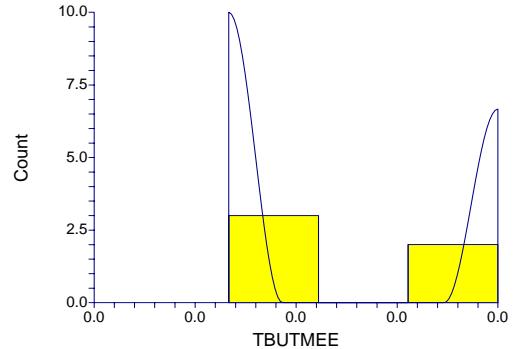
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	
D(1)<D(2)	0.100000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	0.9191

Plots Section

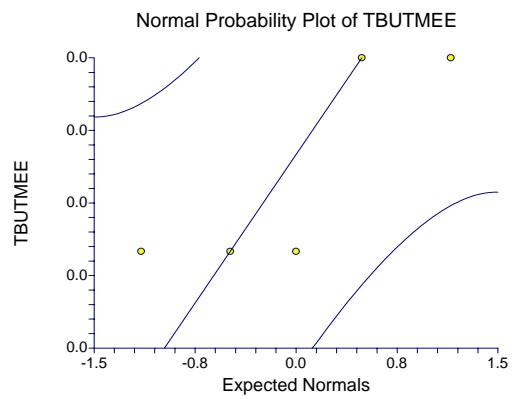
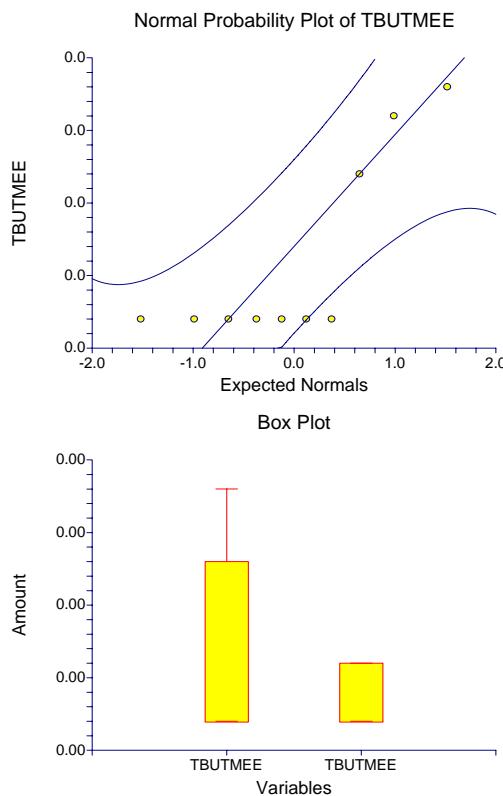
Histogram of TBUTMEE



Histogram of TBUTMEE



Two-Sample Test Report



E-3 ASSABET RIVER SEDIMENT UPSTREAM VERSUS SITE

Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TCA111	10	3.9593	8.927635	2.823166	-2.427145	10.34575
TCA111	10	1.59	2.444377	0.7729799	-0.1586019	3.338602

Note: T-alpha (TCA111) = 2.2622, T-alpha (TCA111) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	2.3693	6.545137	2.927074	-3.780255	8.518855
Unequal	10.34	2.3693	9.256223	2.927074	-4.123525	8.862124

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2182

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8094	0.428831	Accept Ho	0.119631	0.033519
Difference < 0	0.8094	0.785584	Accept Ho	0.007658	0.001039
Difference > 0	0.8094	0.214416	Accept Ho	0.193347	0.057547
Difference: (TCA111)-(TCA111)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8094	0.436488	Accept Ho	0.114094	0.030208
Difference < 0	0.8094	0.781756	Accept Ho	0.008103	0.001176
Difference > 0	0.8094	0.218244	Accept Ho	0.187366	0.053007
Difference: (TCA111)-(TCA111)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TCA111)	3.7582	0.000171	Reject normality
Kurtosis Normality (TCA111)	3.3643	0.000767	Reject normality
Omnibus Normality (TCA111)	25.4429	0.000003	Reject normality
Skewness Normality (TCA111)	3.7516	0.000176	Reject normality
Kurtosis Normality (TCA111)	3.3791	0.000727	Reject normality
Omnibus Normality (TCA111)	25.4924	0.000003	Reject normality
Variance-Ratio Equal-Variance Test	13.3394	0.000674	Reject equal variances
Modified-Levene Equal-Variance Test	0.6685	0.424282	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TCA111	10	0.53375	0.451	6.5
TCA111	10	0.5375	0.4615	1.6

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TCA111	46	101	105	13.22378
TCA111	54	109	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

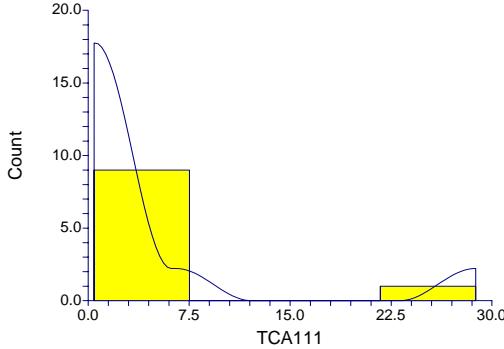
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.3025	0.762282	Accept Ho	-0.2647	0.791260	Accept Ho
Diff<0			-0.3025	0.381141	Accept Ho	-0.2647	0.395630	Accept Ho
Diff>0			-0.3025	0.618859	Accept Ho	-0.3403	0.633183	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

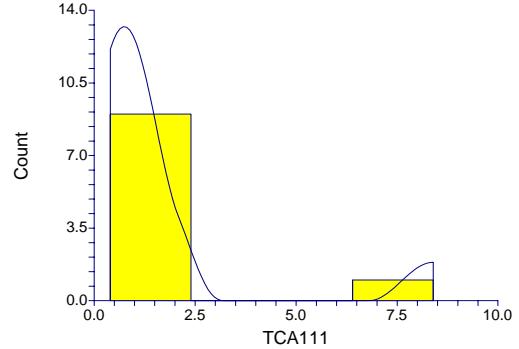
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

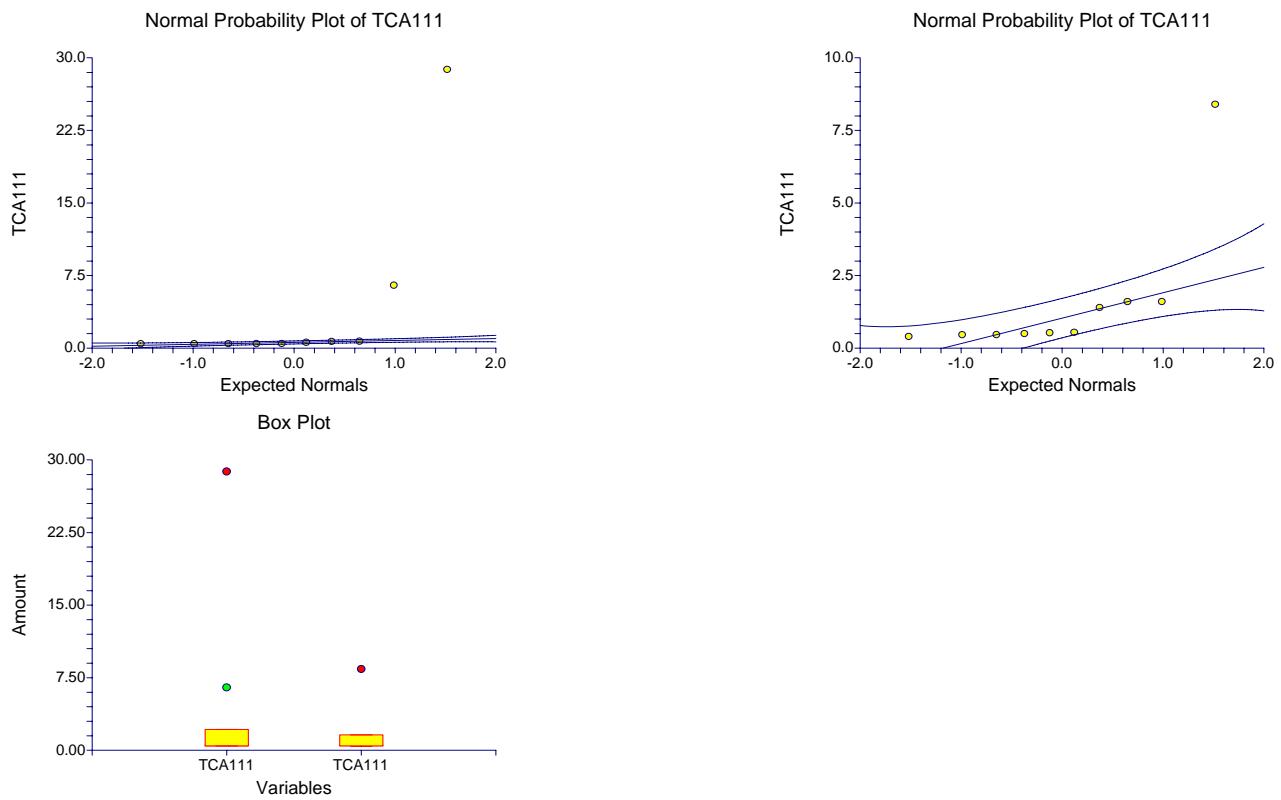
Histogram of TCA111



Histogram of TCA111



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
DCA11	10	0.7058	0.5016976	0.1586507	0.3469072	1.064693
DCA11	10	0.49875	6.867324E-02	2.171639E-02	0.4496241	0.5478759

Note: T-alpha (DCA11) = 2.2622, T-alpha (DCA11) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.20705	0.3580618	0.1601301	-0.1293708	0.5434709
Unequal	9.34	0.20705	0.5063758	0.1601301	-0.1532054	0.5673054

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2498

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.2930	0.212357	Accept Ho	0.231800	0.081184
Difference < 0	1.2930	0.893821	Accept Ho	0.001919	0.000208
Difference > 0	1.2930	0.106179	Accept Ho	0.344409	0.129621
Difference: (DCA11)-(DCA11)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.2930	0.227082	Accept Ho	0.213597	0.067512
Difference < 0	1.2930	0.886459	Accept Ho	0.002178	0.000272
Difference > 0	1.2930	0.113541	Accept Ho	0.328038	0.112938
Difference: (DCA11)-(DCA11)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (DCA11)	3.7217	0.000198	Reject normality
Kurtosis Normality (DCA11)	3.3574	0.000787	Reject normality
Omnibus Normality (DCA11)	25.1235	0.000004	Reject normality
Skewness Normality (DCA11)	0.7480	0.454437	Cannot reject normality
Kurtosis Normality (DCA11)	0.2080	0.835213	Cannot reject normality
Omnibus Normality (DCA11)	0.6028	0.739769	Cannot reject normality
Variance-Ratio Equal-Variance Test	53.3714	0.000002	Reject equal variances
Modified-Levene Equal-Variance Test	1.7271	0.205280	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
DCA11	10	0.53375	0.451	0.715
DCA11	10	0.485	0.4275	0.56

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
DCA11	63	118	105	13.22876
DCA11	37	92	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

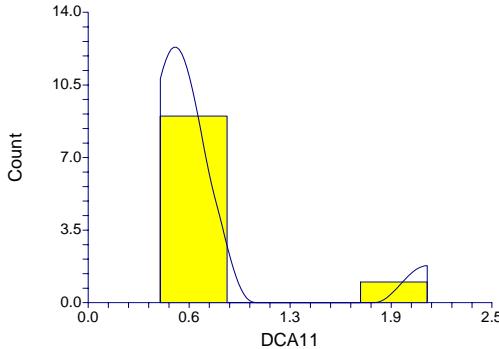
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.352681	Accept Ho	0.9827	0.325751	Accept Ho	0.9449	0.344704	Accept Ho
Diff<0	0.823659	Accept Ho	0.9827	0.837124	Accept Ho	1.0205	0.846255	Accept Ho
Diff>0	0.176341	Accept Ho	0.9827	0.162876	Accept Ho	0.9449	0.172352	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

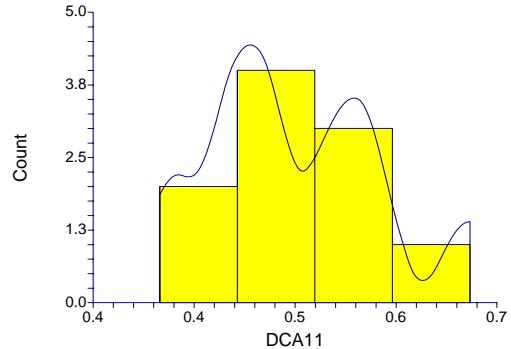
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

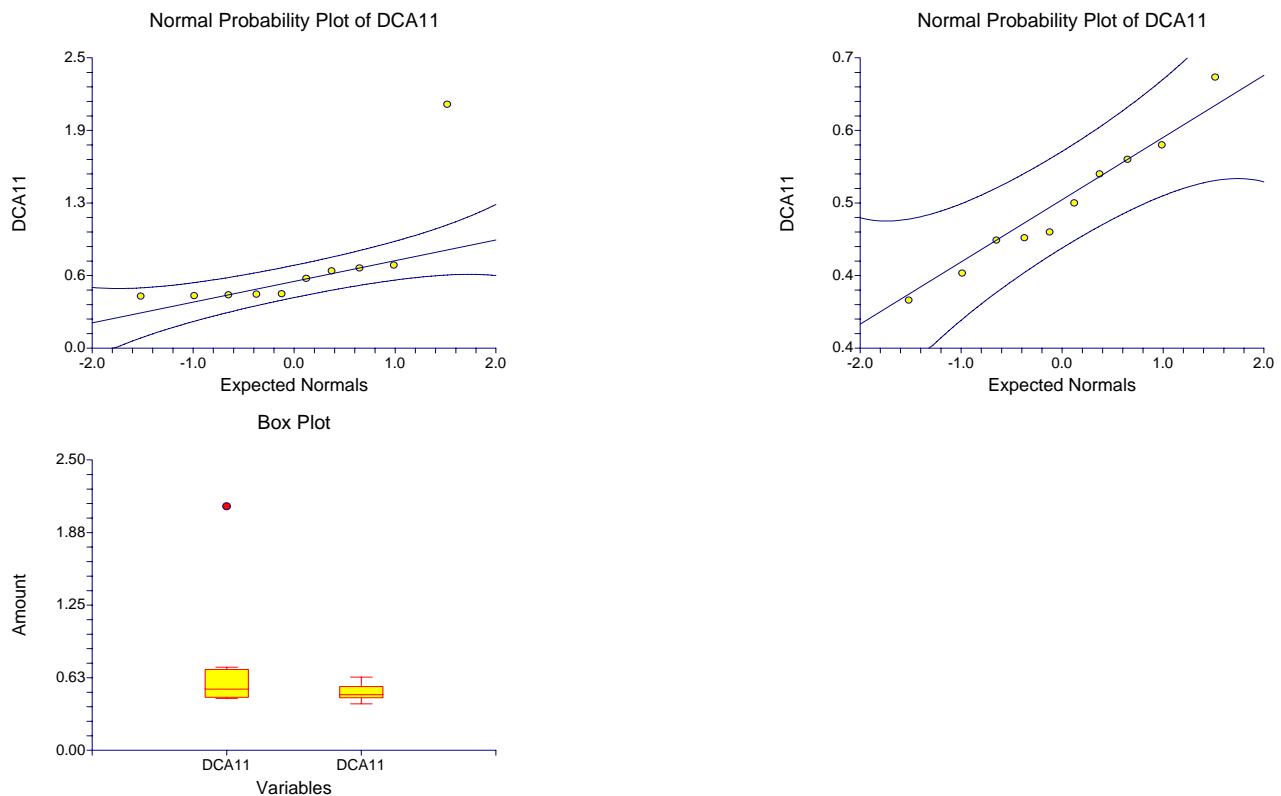
Histogram of DCA11



Histogram of DCA11



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
DCE11	10	3.1238	7.159753	2.264113	-1.997979	8.245579
DCE11	10	0.6516	0.479689	0.151691	0.3084511	0.9947488

Note: T-alpha (DCE11) = 2.2622, T-alpha (DCE11) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	2.4722	5.074059	2.269188	-2.295188	7.239588
Unequal	9.08	2.4722	7.175804	2.269188	-2.654107	7.598507

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2591

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0895	0.290320	Accept Ho	0.178113	0.056915
Difference < 0	1.0895	0.854840	Accept Ho	0.003521	0.000419
Difference > 0	1.0895	0.145160	Accept Ho	0.275511	0.094007
Difference: (DCE11)-(DCE11)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0895	0.304015	Accept Ho	0.164589	0.047824
Difference < 0	1.0895	0.847993	Accept Ho	0.003920	0.000527
Difference > 0	1.0895	0.152007	Accept Ho	0.262422	0.082352
Difference: (DCE11)-(DCE11)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (DCE11)	3.9243	0.000087	Reject normality
Kurtosis Normality (DCE11)	3.5253	0.000423	Reject normality
Omnibus Normality (DCE11)	27.8280	0.000001	Reject normality
Skewness Normality (DCE11)	3.8428	0.000122	Reject normality
Kurtosis Normality (DCE11)	3.4602	0.000540	Reject normality
Omnibus Normality (DCE11)	26.7402	0.000002	Reject normality
Variance-Ratio Equal-Variance Test	222.7802	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	1.1869	0.290334	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
DCE11	10	0.53375	0.451	2.6
DCE11	10	0.515	0.406	0.65

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
DCE11	60	115	105	13.22876
DCE11	40	95	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

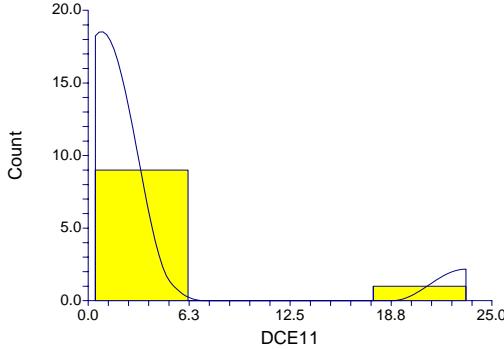
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.481251	Accept Ho	0.7559	0.449692	Accept Ho	0.7181	0.472676	Accept Ho
Diff<0	0.759375	Accept Ho	0.7559	0.775154	Accept Ho	0.7937	0.786322	Accept Ho
Diff>0	0.240625	Accept Ho	0.7559	0.224846	Accept Ho	0.7181	0.236338	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

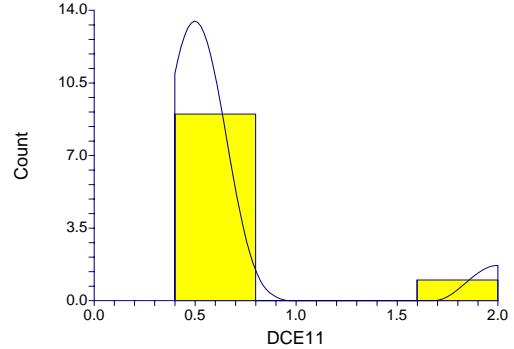
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

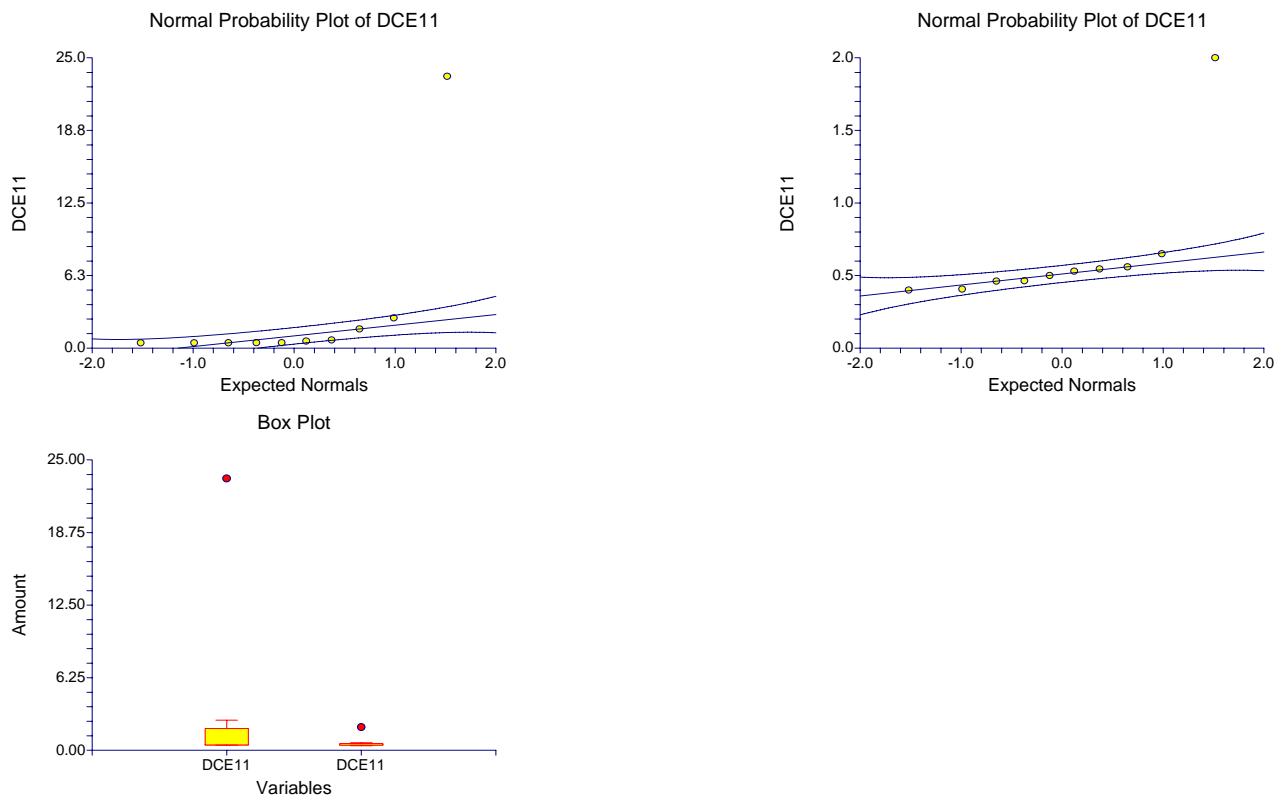
Histogram of DCE11



Histogram of DCE11



Two-Sample Test Report



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
PCE	10	0.5613	0.1131806	3.579084E-02	0.4803355	0.6422645
PCE	10	0.49235	7.439424E-02	2.352552E-02	0.4391316	0.5455684

Note: T-alpha (PCE) = 2.2622, T-alpha (PCE) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption		Difference				
Equal	18	0.06895	9.577147E-02	0.0428303	-2.103312E-02	0.1589331
Unequal	15.55	0.06895	0.1354413	0.0428303	-2.205845E-02	0.1599585

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1249

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6098	0.124830	Accept Ho	0.331782	0.133521
Difference < 0	1.6098	0.937585	Accept Ho	0.000695	0.000065
Difference > 0	1.6098	0.062415	Accept Ho	0.461829	0.201762
Difference: (PCE)-(PCE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6098	0.127538	Accept Ho	0.326965	0.128896
Difference < 0	1.6098	0.936231	Accept Ho	0.000716	0.000070
Difference > 0	1.6098	0.063769	Accept Ho	0.458018	0.196678
Difference: (PCE)-(PCE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (PCE)	0.3017	0.762907	Cannot reject normality
Kurtosis Normality (PCE)	-2.5524	0.010697	Reject normality
Omnibus Normality (PCE)	6.6059	0.036774	Reject normality
Skewness Normality (PCE)	0.6826	0.494830	Cannot reject normality
Kurtosis Normality (PCE)	-0.2332	0.815578	Cannot reject normality
Omnibus Normality (PCE)	0.5204	0.770895	Cannot reject normality
Variance-Ratio Equal-Variance Test	2.3145	0.227195	Cannot reject equal variances
Modified-Levene Equal-Variance Test	5.6658	0.028557	Reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
PCE	10	0.53375	0.451	0.69
PCE	10	0.482	0.406	0.56

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
PCE	68	123	105	13.22876
PCE	32	87	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

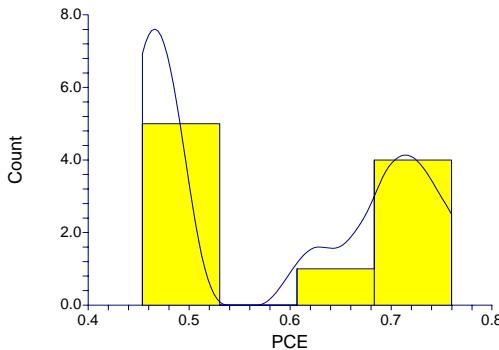
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.190316	Accept Ho	1.3607	0.173617	Accept Ho	1.3229	0.185877	Accept Ho
Diff<0	0.904842	Accept Ho	1.3607	0.913191	Accept Ho	1.3985	0.919014	Accept Ho
Diff>0	0.095158	Accept Ho	1.3607	0.086809	Accept Ho	1.3229	0.092938	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

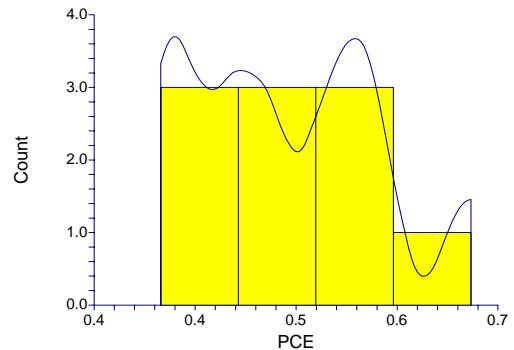
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

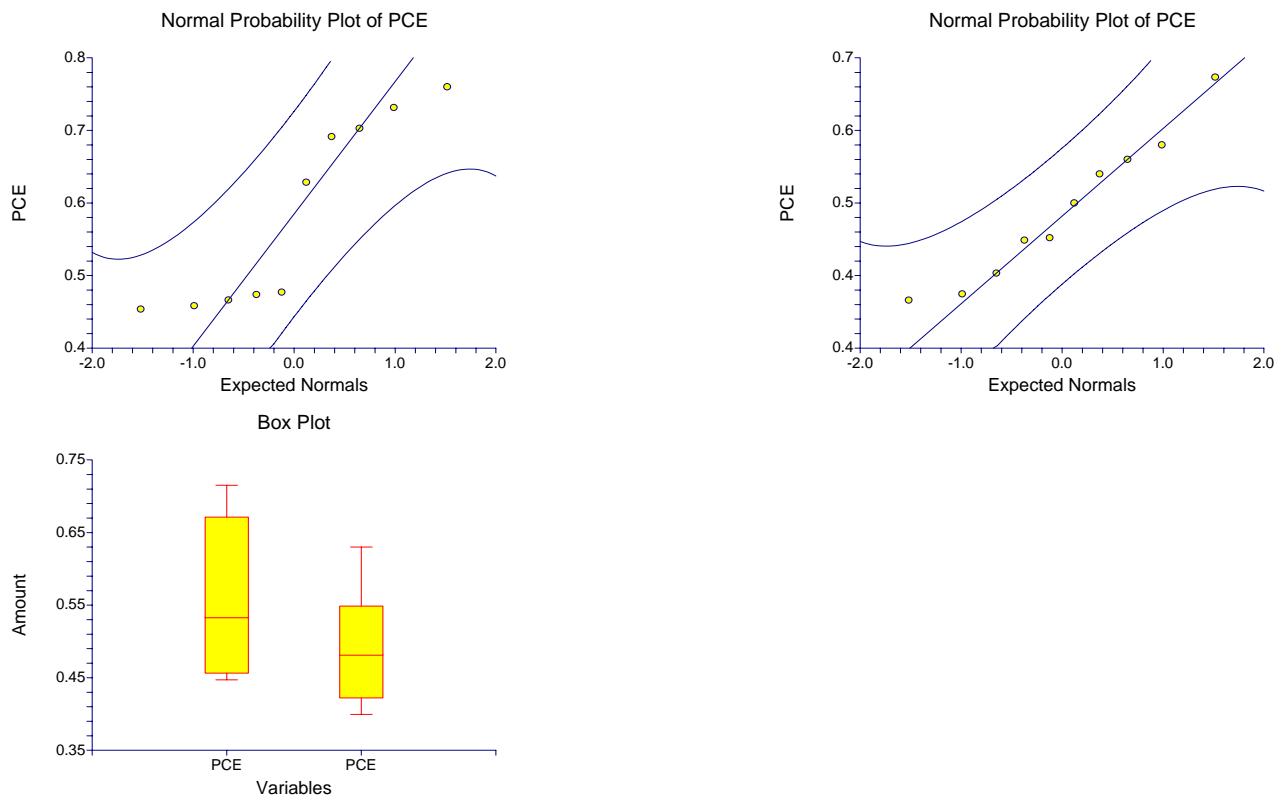
Histogram of PCE



Histogram of PCE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TCE	10	0.87485	0.9635859	0.3047126	0.1855422	1.564158
TCE	10	0.49235	7.439424E-02	2.352552E-02	0.4391316	0.5455684

Note: T-alpha (TCE) = 2.2622, T-alpha (TCE) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	0.3825	0.6833858	0.3056194	-0.2595826	1.024583
Unequal	9.11	0.3825	0.9664534	0.3056194	-0.3076196	1.07262

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2581

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.2516	0.226753	Accept Ho	0.220138	0.075687
Difference < 0	1.2516	0.886624	Accept Ho	0.002178	0.000241
Difference > 0	1.2516	0.113376	Accept Ho	0.329850	0.121701
Difference: (TCE)-(TCE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.2516	0.241922	Accept Ho	0.202242	0.062592
Difference < 0	1.2516	0.879039	Accept Ho	0.002474	0.000315
Difference > 0	1.2516	0.120961	Accept Ho	0.313502	0.105541
Difference: (TCE)-(TCE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TCE)	3.9075	0.000093	Reject normality
Kurtosis Normality (TCE)	3.5140	0.000441	Reject normality
Omnibus Normality (TCE)	27.6169	0.000001	Reject normality
Skewness Normality (TCE)	0.6826	0.494830	Cannot reject normality
Kurtosis Normality (TCE)	-0.2332	0.815578	Cannot reject normality
Omnibus Normality (TCE)	0.5204	0.770895	Cannot reject normality
Variance-Ratio Equal-Variance Test	167.7653	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	1.3098	0.267424	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TCE	10	0.6275	0.451	0.715
TCE	10	0.482	0.406	0.56

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TCE	73	128	105	13.22876
TCE	27	82	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

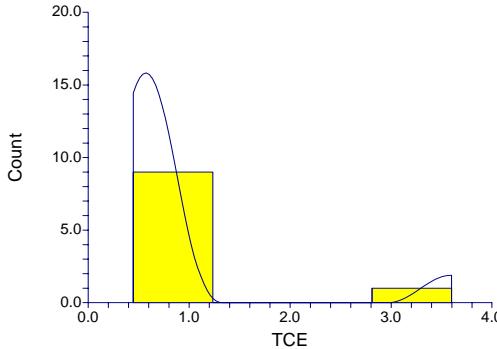
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.089210	Accept Ho	1.7386	0.082099	Accept Ho	1.7008	0.088973	Accept Ho
Diff<0	0.955395	Accept Ho	1.7386	0.958951	Accept Ho	1.7764	0.962169	Accept Ho
Diff>0	0.044605	Reject Ho	1.7386	0.041049	Reject Ho	1.7008	0.044487	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

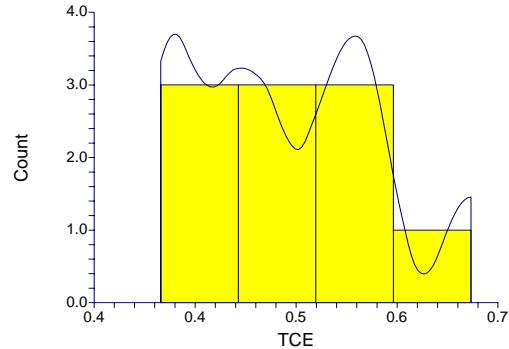
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.500000	0.5623	.025	Accept Ho	

Plots Section

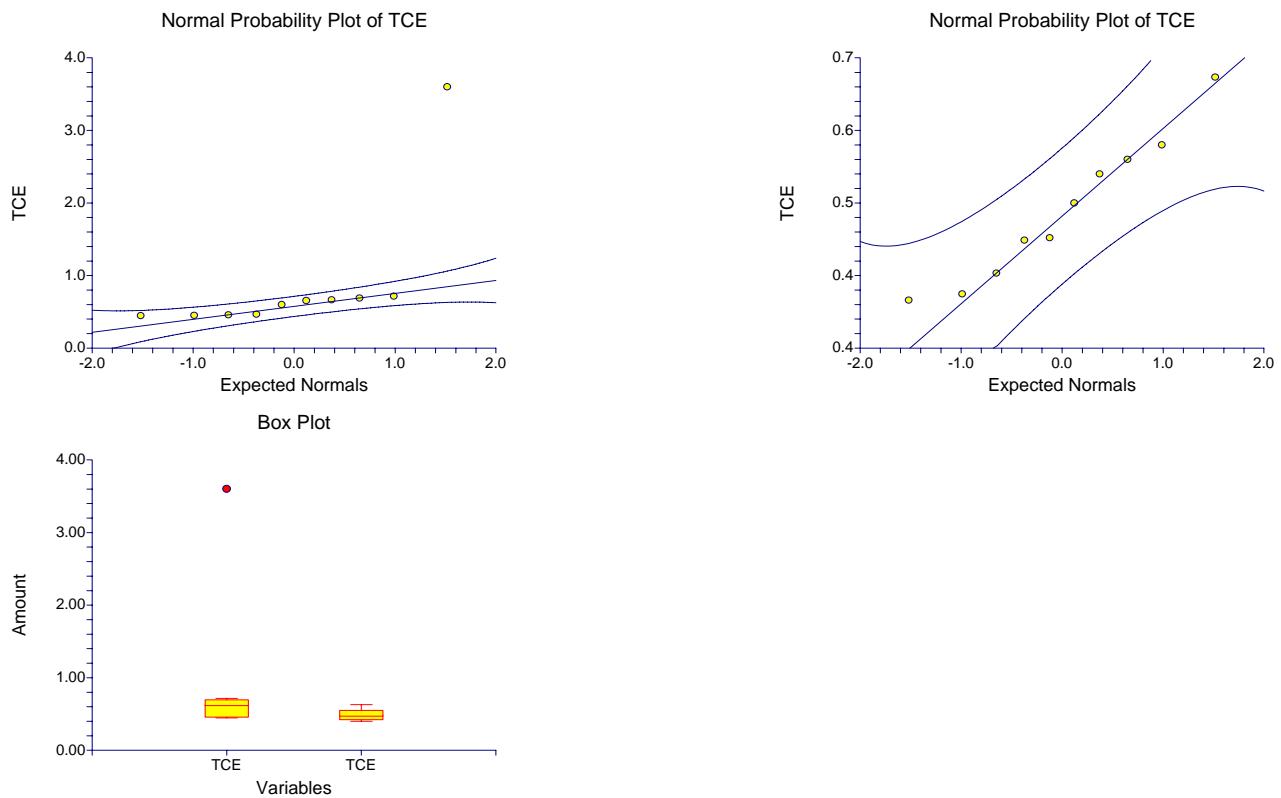
Histogram of TCE



Histogram of TCE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AL	10	0.0882	7.375342E-02	2.332288E-02	3.543998E-02	0.14096
AL	10	0.0387	1.844391E-02	5.832476E-03	2.550602E-02	5.189398E-02

Note: T-alpha (AL) = 2.2622, T-alpha (AL) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.0495	5.375753E-02	0.0240411	-1.008475E-03	0.1000085
Unequal	10.12	0.0495	7.602463E-02	0.0240411	-3.98002E-03	0.10298

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2245

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.0590	0.054266	Accept Ho	0.495559	0.241082
Difference < 0	2.0590	0.972867	Accept Ho	0.000142	0.000011
Difference > 0	2.0590	0.027133	Reject Ho	0.631497	0.336981
Difference: (AL)-(AL)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.0590	0.066168	Accept Ho	0.461510	0.200476
Difference < 0	2.0590	0.966916	Accept Ho	0.000173	0.000016
Difference > 0	2.0590	0.033084	Reject Ho	0.607946	0.295839
Difference: (AL)-(AL)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AL)	2.6040	0.009214	Reject normality
Kurtosis Normality (AL)	2.2231	0.026206	Reject normality
Omnibus Normality (AL)	11.7233	0.002847	Reject normality
Skewness Normality (AL)	-0.0103	0.991788	Cannot reject normality
Kurtosis Normality (AL)	-1.5153	0.129695	Cannot reject normality
Omnibus Normality (AL)	2.2963	0.317229	Cannot reject normality
Variance-Ratio Equal-Variance Test	15.9904	0.000325	Reject equal variances
Modified-Levene Equal-Variance Test	3.9421	0.062542	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AL	10	0.065	0.03	0.13
AL	10	0.043	0.018	0.06

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AL	75	130	105	13.22378
AL	25	80	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

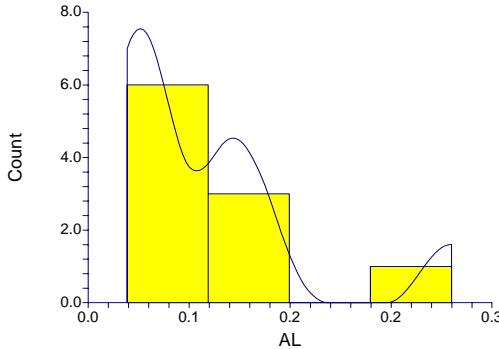
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.8905	0.058687	Accept Ho	1.8527	0.063922	Accept Ho
Diff<0			1.8905	0.970657	Accept Ho	1.9283	0.973094	Accept Ho
Diff>0			1.8905	0.029343	Reject Ho	1.8527	0.031961	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

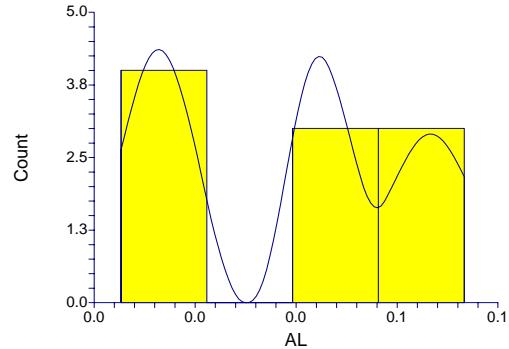
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.500000	0.5623	.025	Accept Ho	

Plots Section

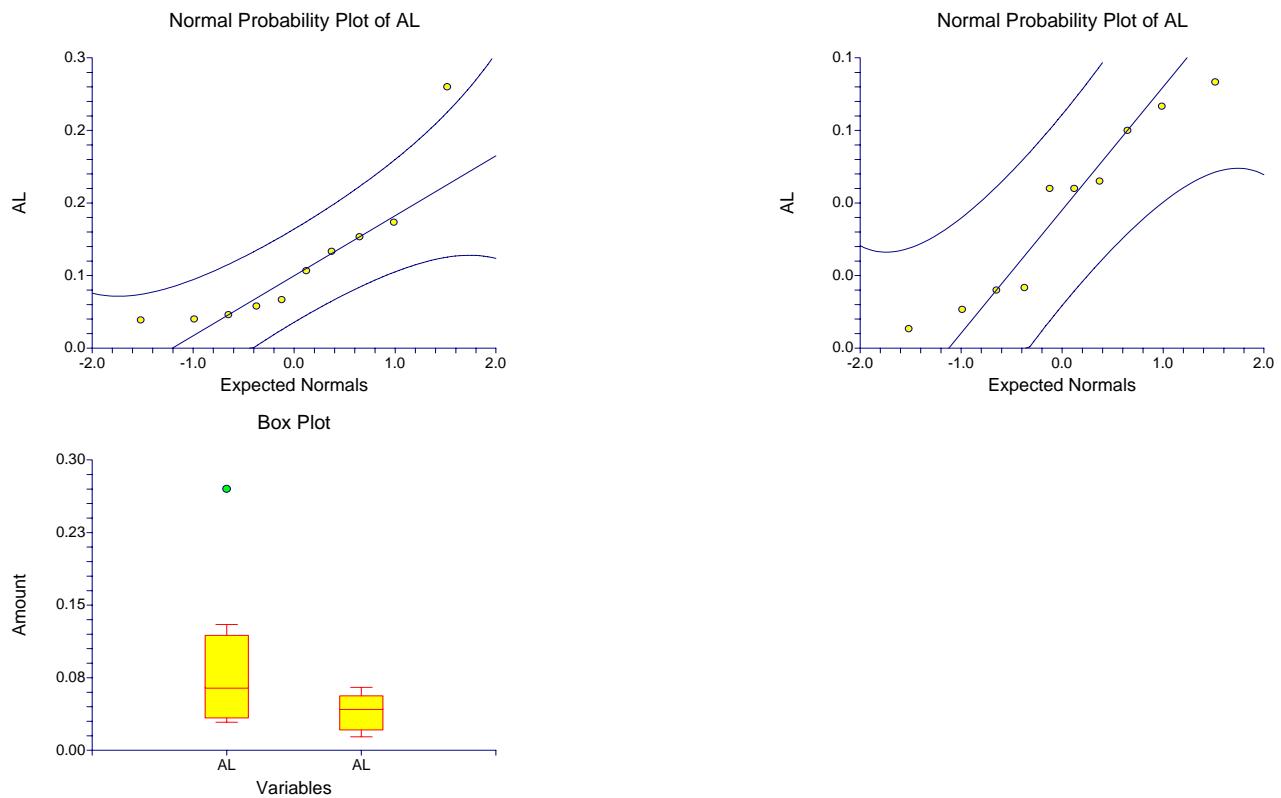
Histogram of AL



Histogram of AL



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AS	10	41.26	21.71007	6.865327	25.72955	56.79045
AS	10	26.42	9.654222	3.052933	19.51379	33.32621

Note: T-alpha (AS) = 2.2622, T-alpha (AS) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	14.84	16.80076	7.513528	-0.9453377	30.62534
Unequal	12.43	14.84	23.75986	7.513528	-1.468611	31.14861

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1706

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.9751	0.063796	Accept Ho	0.464018	0.218050
Difference < 0	1.9751	0.968102	Accept Ho	0.000193	0.000015
Difference > 0	1.9751	0.031898	Reject Ho	0.600729	0.309207
Difference: (AS)-(AS)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.9751	0.070899	Accept Ho	0.445310	0.196205
Difference < 0	1.9751	0.964551	Accept Ho	0.000216	0.000020
Difference > 0	1.9751	0.035449	Reject Ho	0.587530	0.286946
Difference: (AS)-(AS)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AS)	1.2635	0.206395	Cannot reject normality
Kurtosis Normality (AS)	-0.0015	0.998770	Cannot reject normality
Omnibus Normality (AS)	1.5965	0.450108	Cannot reject normality
Skewness Normality (AS)	1.0568	0.290591	Cannot reject normality
Kurtosis Normality (AS)	0.4729	0.636264	Cannot reject normality
Omnibus Normality (AS)	1.3405	0.511570	Cannot reject normality
Variance-Ratio Equal-Variance Test	5.0569	0.024151	Reject equal variances
Modified-Levene Equal-Variance Test	3.4257	0.080672	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AS	10	35.45	19	69.5
AS	10	25.05	18.2	37.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AS	70	125	105	13.22876
AS	30	85	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

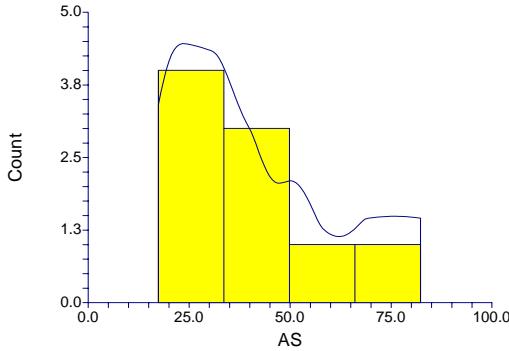
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.143140	Accept Ho	1.5119	0.130570	Accept Ho	1.4741	0.140465	Accept Ho
Diff<0	0.928430	Accept Ho	1.5119	0.934715	Accept Ho	1.5497	0.939388	Accept Ho
Diff>0	0.071570	Accept Ho	1.5119	0.065285	Accept Ho	1.4741	0.070233	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

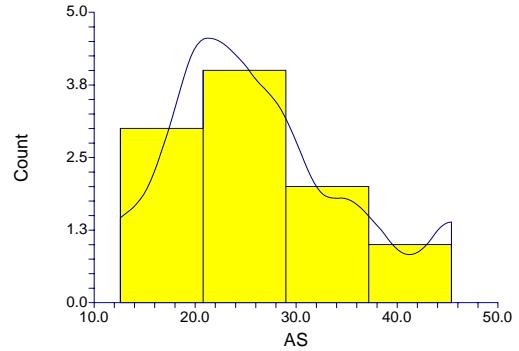
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

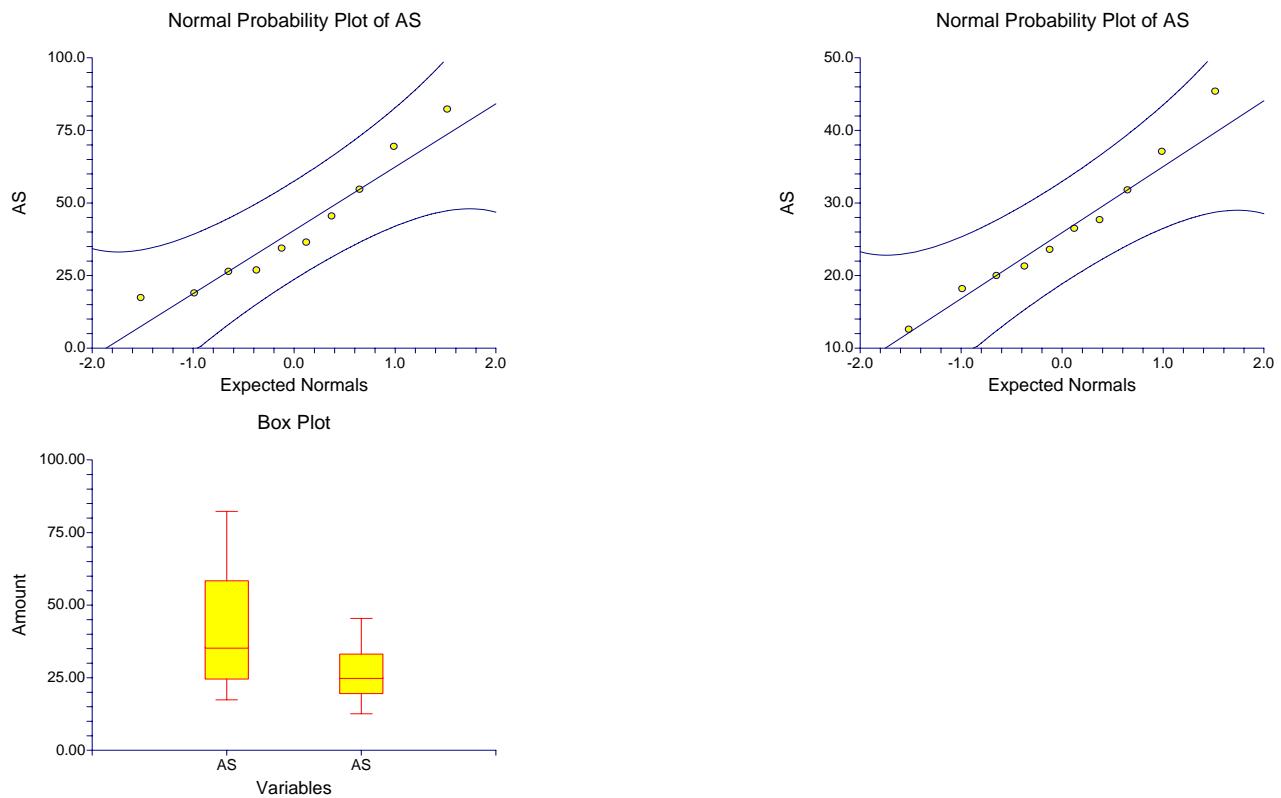
Histogram of AS



Histogram of AS



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BA	10	0.5613	0.1131806	3.579084E-02	0.4803355	0.6422645
BA	10	0.49235	7.439424E-02	2.352552E-02	0.4391316	0.5455684

Note: T-alpha (BA) = 2.2622, T-alpha (BA) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	0.06895	9.577147E-02	0.0428303	-2.103312E-02	0.1589331
Unequal	15.55	0.06895	0.1354413	0.0428303	-2.205845E-02	0.1599585

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1249

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6098	0.124830	Accept Ho	0.331782	0.133521
Difference < 0	1.6098	0.937585	Accept Ho	0.000695	0.000065
Difference > 0	1.6098	0.062415	Accept Ho	0.461829	0.201762
Difference: (BA)-(BA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6098	0.127538	Accept Ho	0.326965	0.128896
Difference < 0	1.6098	0.936231	Accept Ho	0.000716	0.000070
Difference > 0	1.6098	0.063769	Accept Ho	0.458018	0.196678
Difference: (BA)-(BA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BA)	0.3017	0.762907	Cannot reject normality
Kurtosis Normality (BA)	-2.5524	0.010697	Reject normality
Omnibus Normality (BA)	6.6059	0.036774	Reject normality
Skewness Normality (BA)	0.6826	0.494830	Cannot reject normality
Kurtosis Normality (BA)	-0.2332	0.815578	Cannot reject normality
Omnibus Normality (BA)	0.5204	0.770895	Cannot reject normality
Variance-Ratio Equal-Variance Test	2.3145	0.227195	Cannot reject equal variances
Modified-Levene Equal-Variance Test	5.6658	0.028557	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BA	10	0.53375	0.451	0.69
BA	10	0.482	0.406	0.56

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BA	68	123	105	13.22876
BA	32	87	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

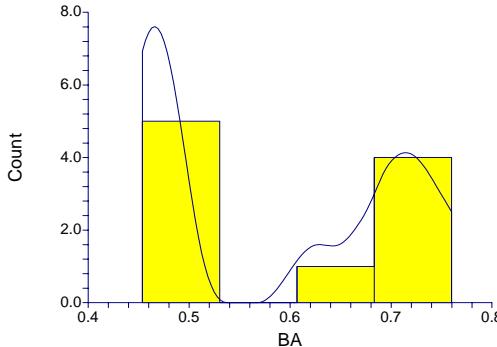
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.190316	Accept Ho	1.3607	0.173617	Accept Ho	1.3229	0.185877	Accept Ho
Diff<0	0.904842	Accept Ho	1.3607	0.913191	Accept Ho	1.3985	0.919014	Accept Ho
Diff>0	0.095158	Accept Ho	1.3607	0.086809	Accept Ho	1.3229	0.092938	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

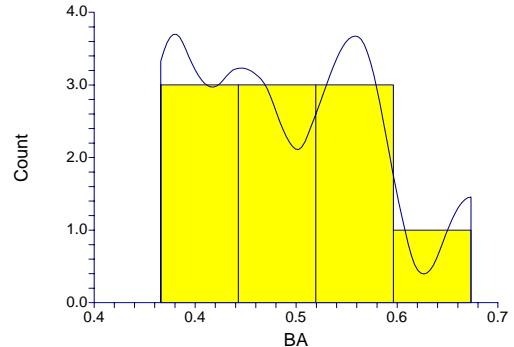
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

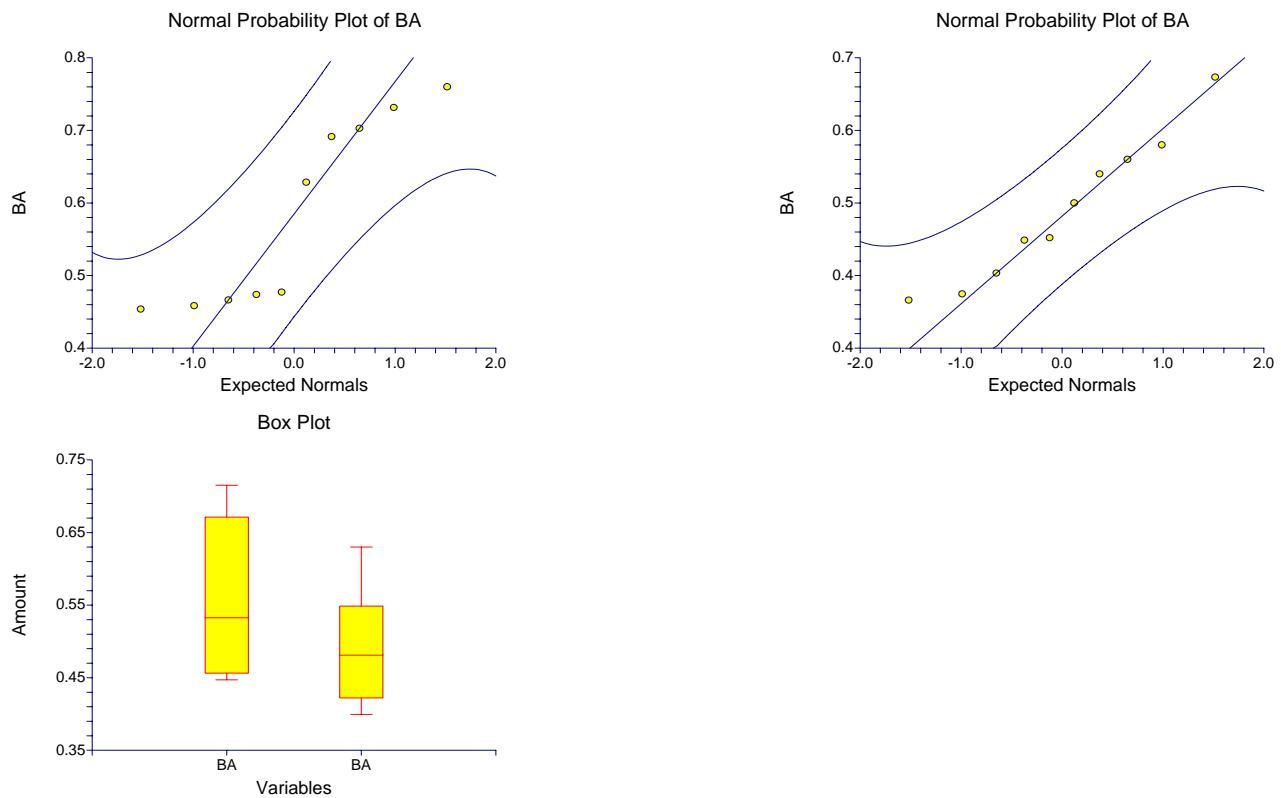
Histogram of BA



Histogram of BA



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BE	10	5.3537	15.96948	5.049993	-6.070178	16.77758
BE	10	0.259	8.033956E-02	0.0254056	0.2015285	0.3164715

Note: T-alpha (BE) = 2.2622, T-alpha (BE) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	5.0947	11.29227	5.050057	-5.515076	15.70448
Unequal	9.00	5.0947	15.96968	5.050057	-6.329234	16.51863

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2621

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0088	0.326421	Accept Ho	0.159410	0.049085
Difference < 0	1.0088	0.836789	Accept Ho	0.004435	0.000548
Difference > 0	1.0088	0.163211	Accept Ho	0.250224	0.082099
Difference: (BE)-(BE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0088	0.339402	Accept Ho	0.147697	0.041530
Difference < 0	1.0088	0.830299	Accept Ho	0.004896	0.000678
Difference > 0	1.0088	0.169701	Accept Ho	0.238529	0.072214
Difference: (BE)-(BE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BE)	3.9761	0.000070	Reject normality
Kurtosis Normality (BE)	3.5685	0.000359	Reject normality
Omnibus Normality (BE)	28.5439	0.000001	Reject normality
Skewness Normality (BE)	1.1204	0.262544	Cannot reject normality
Kurtosis Normality (BE)	0.4301	0.667159	Cannot reject normality
Omnibus Normality (BE)	1.4402	0.486694	Cannot reject normality
Variance-Ratio Equal-Variance Test	39511.4232	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	1.0240	0.324985	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BE	10	0.25	0.15	0.83
BE	10	0.235	0.19	0.33

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BE	58.5	113.5	105	13.20885
BE	41.5	96.5	105	13.20885

Number Sets of Ties = 4, Multiplicity Factor = 24

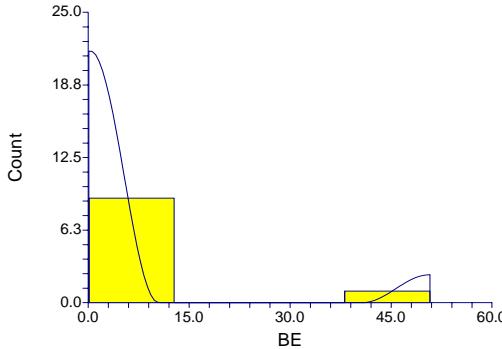
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.6435	0.519895	Accept Ho	0.6057	0.544744	Accept Ho
Diff<0			0.6435	0.740053	Accept Ho	0.6814	0.752179	Accept Ho
Diff>0			0.6435	0.259947	Accept Ho	0.6057	0.272372	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

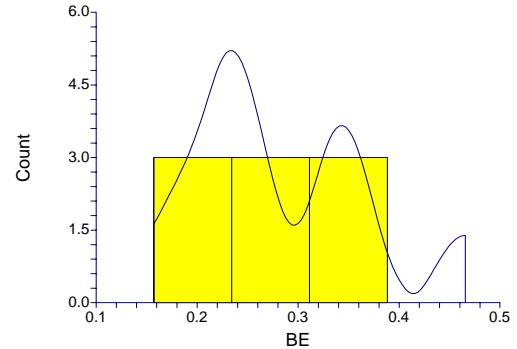
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

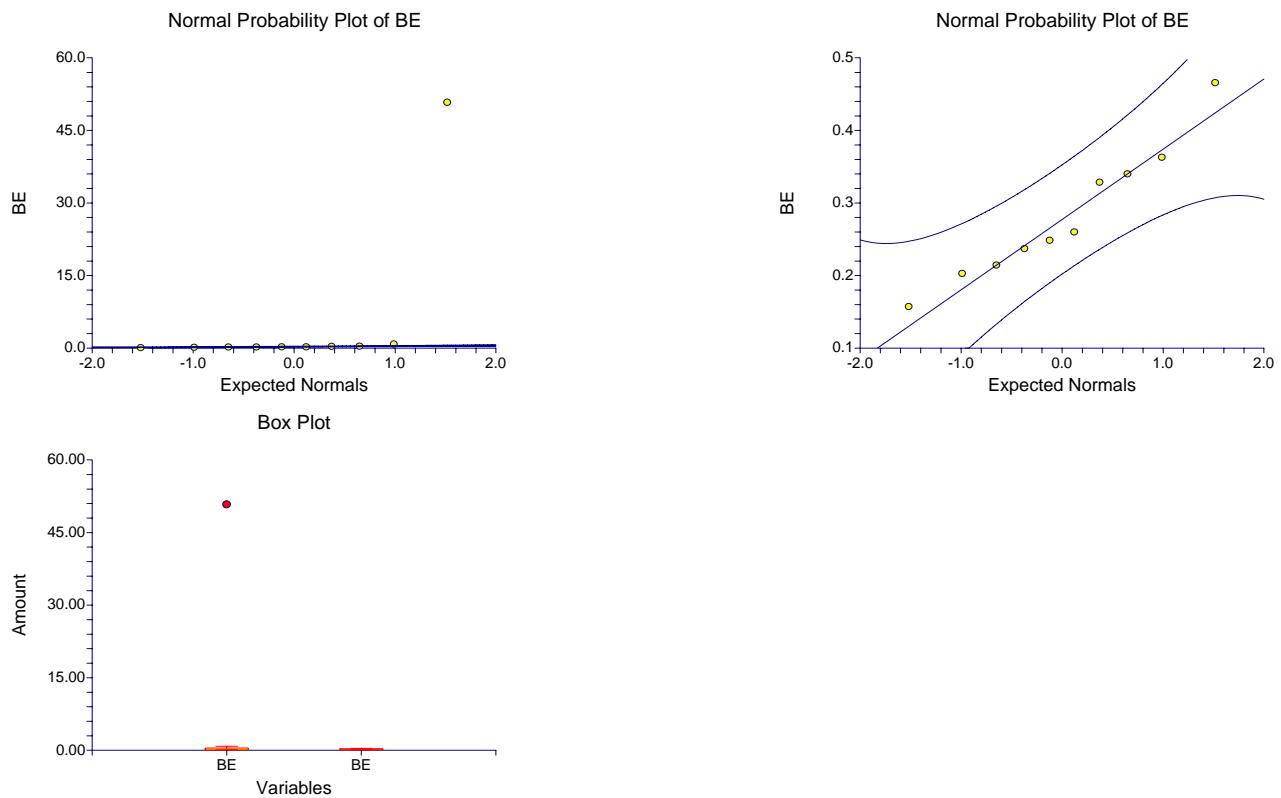
Histogram of BE



Histogram of BE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CD	10	0.507	0.7202322	0.2277574	-8.223089E-03	1.022223
CD	10	0.1533	0.1214505	3.840603E-02	6.641952E-02	0.2401805

Note: T-alpha (CD) = 2.2622, T-alpha (CD) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.3537	0.516471	0.2309729	-0.131556	0.838956
Unequal	9.51	0.3537	0.7304004	0.2309729	-0.1645456	0.8719456

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2438

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5313	0.143069	Accept Ho	0.305388	0.118785
Difference < 0	1.5313	0.928465	Accept Ho	0.000901	0.000088
Difference > 0	1.5313	0.071535	Accept Ho	0.431999	0.181975
Difference: (CD)-(CD)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5313	0.158239	Accept Ho	0.281021	0.097825
Difference < 0	1.5313	0.920880	Accept Ho	0.001049	0.000121
Difference > 0	1.5313	0.079120	Accept Ho	0.411794	0.157788
Difference: (CD)-(CD)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CD)	3.6861	0.000228	Reject normality
Kurtosis Normality (CD)	3.3172	0.000909	Reject normality
Omnibus Normality (CD)	24.5909	0.000005	Reject normality
Skewness Normality (CD)	3.1344	0.001722	Reject normality
Kurtosis Normality (CD)	2.7672	0.005654	Reject normality
Omnibus Normality (CD)	17.4819	0.000160	Reject normality
Variance-Ratio Equal-Variance Test	35.1679	0.000012	Reject equal variances
Modified-Levene Equal-Variance Test	1.5735	0.225739	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CD	10	0.23	0.13	0.64
CD	10	0.11	0.073	0.22

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CD	84	139	105	13.20387
CD	16	71	105	13.20387

Number Sets of Ties = 5, Multiplicity Factor = 30

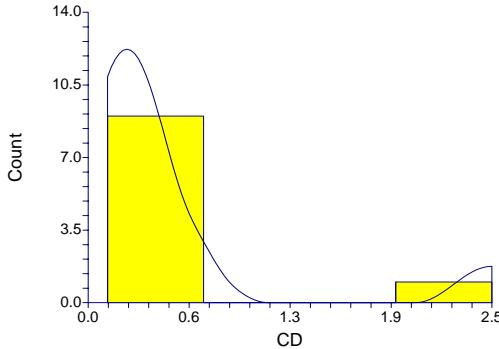
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.5750	0.010024	Reject Ho	2.5371	0.011176	Reject Ho
Diff<0			2.5750	0.994988	Accept Ho	2.6129	0.995511	Accept Ho
Diff>0			2.5750	0.005012	Reject Ho	2.5371	0.005588	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

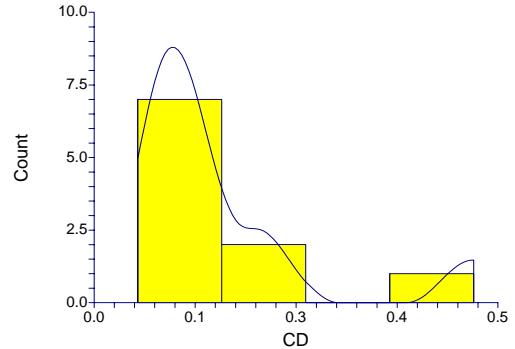
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.600000	0.5623	.050	Reject Ho	0.0524
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.600000	0.5623	.025	Reject Ho	

Plots Section

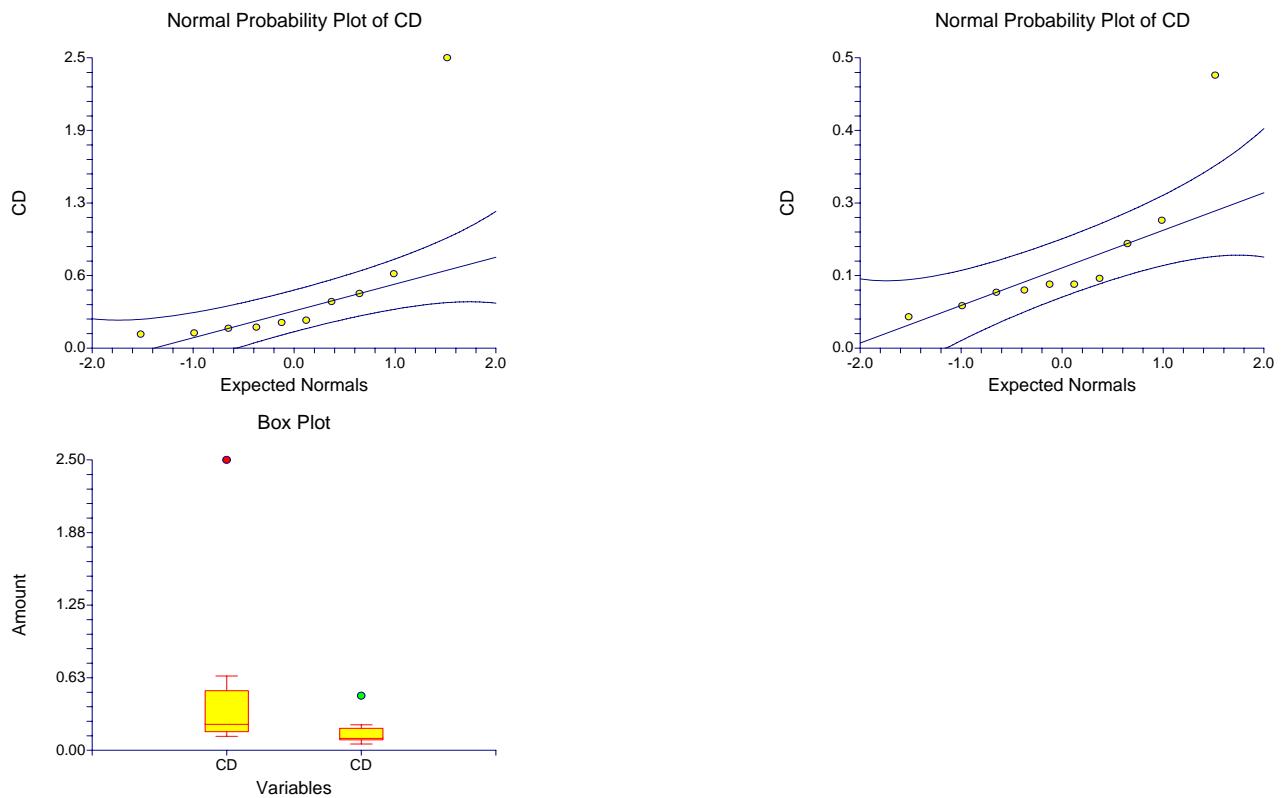
Histogram of CD



Histogram of CD



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CA	10	2147.4	1998.225	631.8942	717.9559	3576.844
CA	10	1256.9	809.7333	256.0602	677.6517	1836.148

Note: T-alpha (CA) = 2.2622, T-alpha (CA) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	890.5	1524.561	681.8043	-541.9177	2322.918
Unequal	11.88	890.5	2156.054	681.8043	-596.716	2377.716

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1813

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3061	0.207966	Accept Ho	0.235554	0.082980
Difference < 0	1.3061	0.896017	Accept Ho	0.001844	0.000199
Difference > 0	1.3061	0.103983	Accept Ho	0.349053	0.132192
Difference: (CA)-(CA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3061	0.216248	Accept Ho	0.225050	0.074766
Difference < 0	1.3061	0.891876	Accept Ho	0.001983	0.000232
Difference > 0	1.3061	0.108124	Accept Ho	0.339757	0.122352
Difference: (CA)-(CA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CA)	2.0965	0.036040	Reject normality
Kurtosis Normality (CA)	0.9379	0.348277	Cannot reject normality
Omnibus Normality (CA)	5.2749	0.071542	Cannot reject normality
Skewness Normality (CA)	3.3182	0.000906	Reject normality
Kurtosis Normality (CA)	3.0038	0.002667	Reject normality
Omnibus Normality (CA)	20.0334	0.000045	Reject normality
Variance-Ratio Equal-Variance Test	6.0898	0.012850	Reject equal variances
Modified-Levene Equal-Variance Test	2.5017	0.131136	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CA	10	1290	685	4890
CA	10	1042.5	822	1560

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CA	55	110	105	13.22876
CA	45	100	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

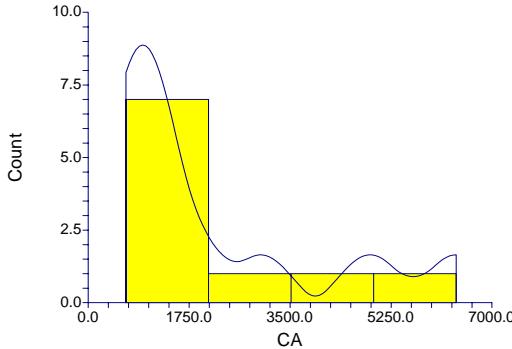
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.739364	Accept Ho	0.3780	0.705457	Accept Ho	0.3402	0.733730	Accept Ho
Diff<0	0.630318	Accept Ho	0.3780	0.647272	Accept Ho	0.4158	0.661208	Accept Ho
Diff>0	0.369682	Accept Ho	0.3780	0.352728	Accept Ho	0.3402	0.366865	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

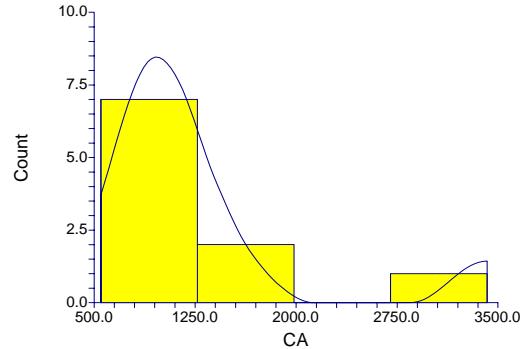
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.300000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

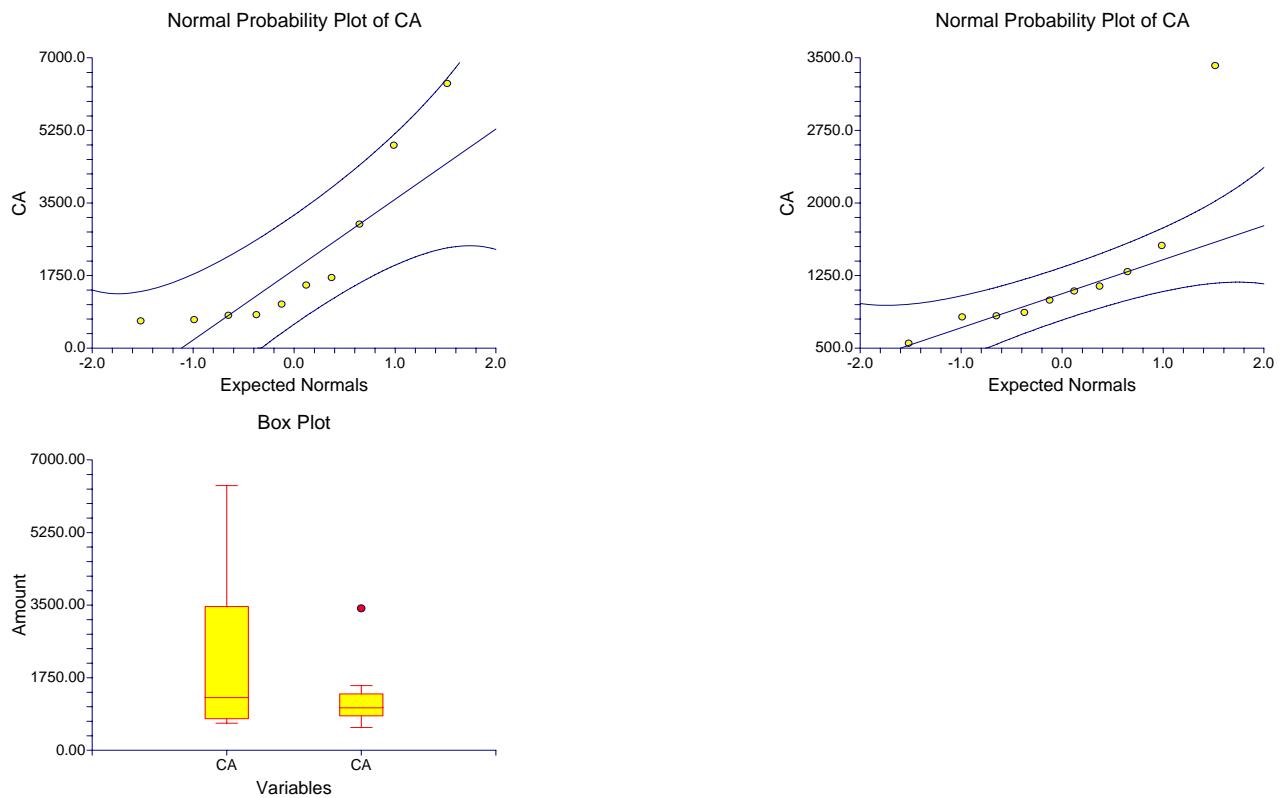
Histogram of CA



Histogram of CA



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CR	10	23.7	9.592127	3.033297	16.83821	30.56179
CR	10	30.93	15.60969	4.936216	19.7635	42.0965

Note: T-alpha (CR) = 2.2622, T-alpha (CR) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-7.23	12.95514	5.793714	-19.40214	4.942142
Unequal	14.95	-7.23	18.32133	5.793714	-19.5827	5.122699

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1321

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.2479	0.228057	Accept Ho	0.219128	0.075217
Difference < 0	-1.2479	0.114028	Accept Ho	0.328579	0.121020
Difference > 0	-1.2479	0.885972	Accept Ho	0.002202	0.000244
Difference: (CR)-(CR)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.2479	0.231260	Accept Ho	0.215281	0.072228
Difference < 0	-1.2479	0.115630	Accept Ho	0.325135	0.117434
Difference > 0	-1.2479	0.884370	Accept Ho	0.002264	0.000259
Difference: (CR)-(CR)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CR)	1.0736	0.282995	Cannot reject normality
Kurtosis Normality (CR)	-0.3255	0.744825	Cannot reject normality
Omnibus Normality (CR)	1.2586	0.532970	Cannot reject normality
Skewness Normality (CR)	1.5121	0.130505	Cannot reject normality
Kurtosis Normality (CR)	0.2386	0.811388	Cannot reject normality
Omnibus Normality (CR)	2.3434	0.309835	Cannot reject normality
Variance-Ratio Equal-Variance Test	2.6482	0.163013	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.6940	0.415719	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CR	10	19.7	16.2	37.1
CR	10	25.95	15.7	56.9

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CR	38	93	105	13.22876
CR	62	117	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

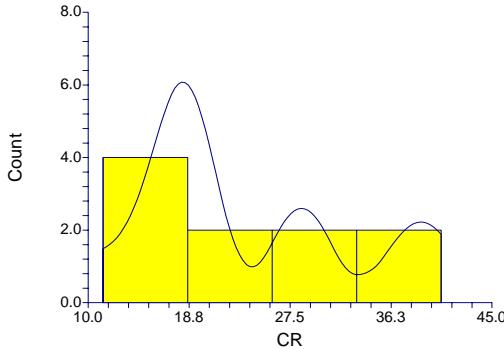
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.393048	Accept Ho	-0.9071	0.364346	Accept Ho	-0.8693	0.384673	Accept Ho
Diff<0	0.196524	Accept Ho	-0.9071	0.182173	Accept Ho	-0.8693	0.192337	Accept Ho
Diff>0	0.803476	Accept Ho	-0.9071	0.817827	Accept Ho	-0.9449	0.827648	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

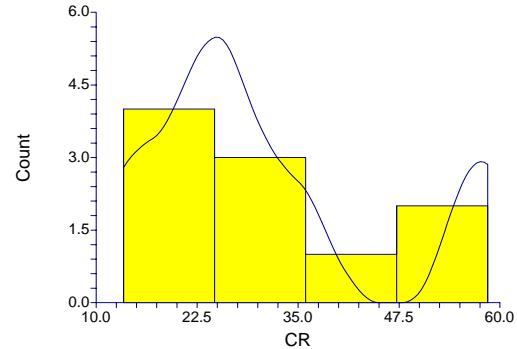
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.400000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.100000	0.5623	.025	Accept Ho	

Plots Section

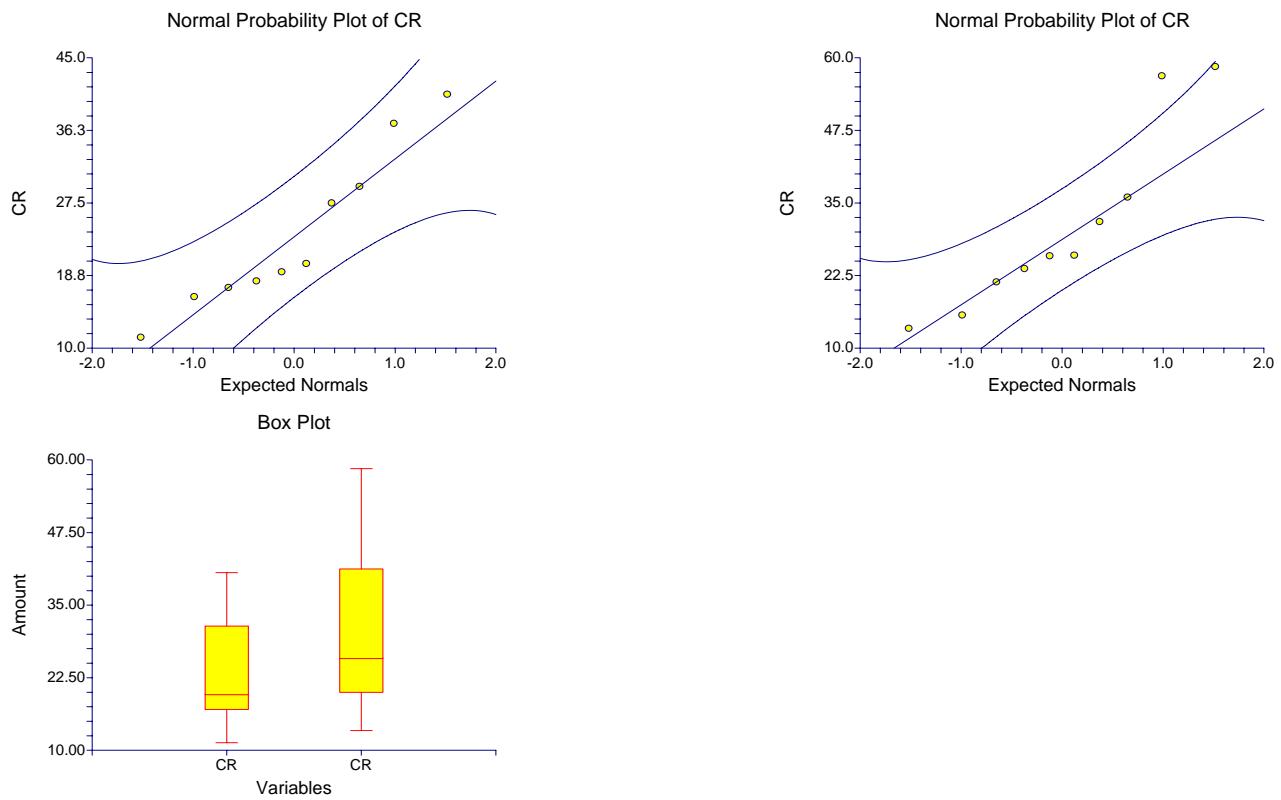
Histogram of CR



Histogram of CR



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CO	10	9.3	9.887928	3.126837	2.226603	16.3734
CO	10	5.55	2.920902	0.9236702	3.460513	7.639487

Note: T-alpha (CO) = 2.2622, T-alpha (CO) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	3.75	7.2905	3.260411	-3.099869	10.59987
Unequal	10.56	3.75	10.31032	3.260411	-3.462866	10.96287

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2123

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1502	0.265129	Accept Ho	0.193168	0.063453
Difference < 0	1.1502	0.867435	Accept Ho	0.002950	0.000342
Difference > 0	1.1502	0.132565	Accept Ho	0.295342	0.103778
Difference: (CO)-(CO)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1502	0.275460	Accept Ho	0.182166	0.055661
Difference < 0	1.1502	0.862270	Accept Ho	0.003207	0.000409
Difference > 0	1.1502	0.137730	Accept Ho	0.285005	0.094027
Difference: (CO)-(CO)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CO)	2.4144	0.015763	Reject normality
Kurtosis Normality (CO)	1.2854	0.198652	Cannot reject normality
Omnibus Normality (CO)	7.4814	0.023737	Reject normality
Skewness Normality (CO)	2.1754	0.029600	Reject normality
Kurtosis Normality (CO)	1.7097	0.087320	Cannot reject normality
Omnibus Normality (CO)	7.6555	0.021758	Reject normality
Variance-Ratio Equal-Variance Test	11.4598	0.001228	Reject equal variances
Modified-Levene Equal-Variance Test	2.0561	0.168737	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CO	10	5.35	2.4	24.4
CO	10	4.75	3	8.5

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CO	53.5	108.5	105	13.20387
CO	46.5	101.5	105	13.20387

Number Sets of Ties = 2, Multiplicity Factor = 30

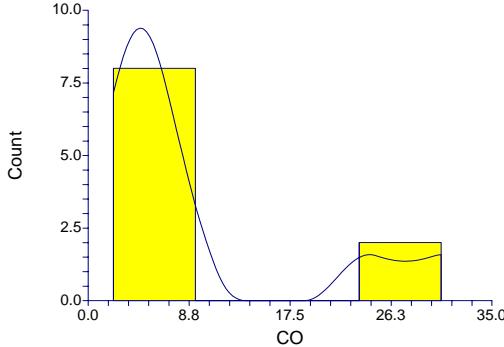
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.2651	0.790953	Accept Ho	0.2272	0.820263	Accept Ho
Diff<0			0.2651	0.604524	Accept Ho	0.3029	0.619033	Accept Ho
Diff>0			0.2651	0.395476	Accept Ho	0.2272	0.410132	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

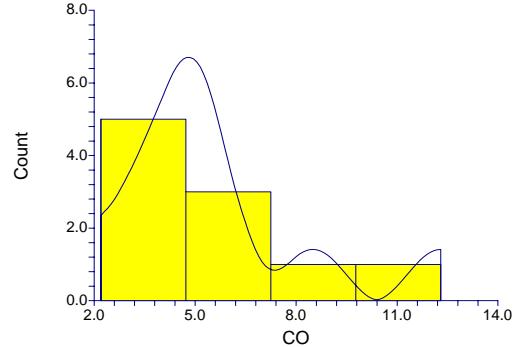
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

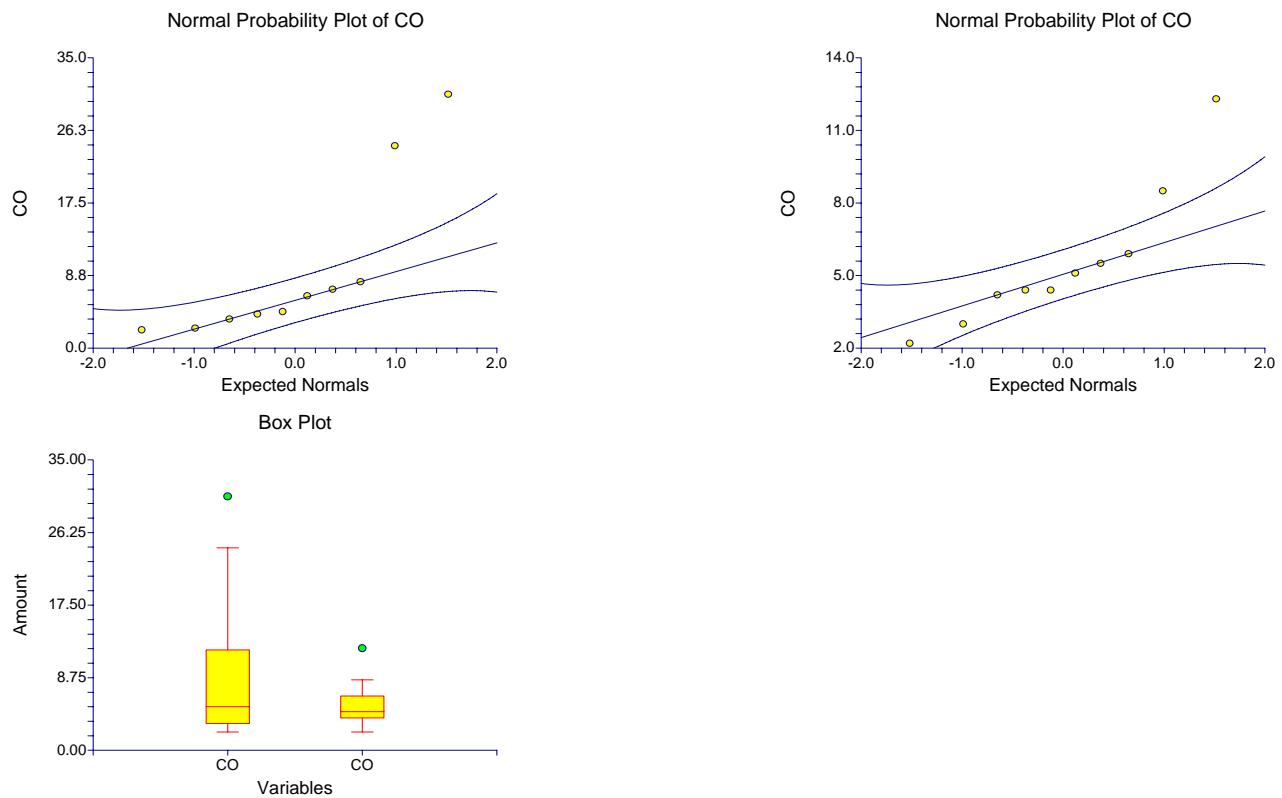
Histogram of CO



Histogram of CO



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CU	10	25.02	12.58145	3.978604	16.01977	34.02023
CU	10	12.28	5.540116	1.751939	8.316839	16.24316

Note: T-alpha (CU) = 2.2622, T-alpha (CU) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	12.74	9.720745	4.34725	3.606768	21.87323
Unequal	12.36	12.74	13.74721	4.34725	3.29897	22.18103

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1717

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.9306	0.008935	Reject Ho	0.791423	0.533940
Difference < 0	2.9306	0.995533	Accept Ho	0.000004	0.000000
Difference > 0	2.9306	0.004467	Reject Ho	0.879575	0.648869
Difference: (CU)-(CU)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.9306	0.012247	Reject Ho	0.769582	0.485939
Difference < 0	2.9306	0.993877	Accept Ho	0.000005	0.000000
Difference > 0	2.9306	0.006123	Reject Ho	0.868610	0.610778
Difference: (CU)-(CU)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CU)	0.4635	0.643029	Cannot reject normality
Kurtosis Normality (CU)	-0.5797	0.562089	Cannot reject normality
Omnibus Normality (CU)	0.5509	0.759229	Cannot reject normality
Skewness Normality (CU)	0.9184	0.358392	Cannot reject normality
Kurtosis Normality (CU)	-0.0877	0.930105	Cannot reject normality
Omnibus Normality (CU)	0.8512	0.653374	Cannot reject normality
Variance-Ratio Equal-Variance Test	5.1573	0.022626	Reject equal variances
Modified-Levene Equal-Variance Test	5.5990	0.029391	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CU	10	25.6	9.3	37.6
CU	10	10.75	6.8	18.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CU	80	135	105	13.22876
CU	20	75	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

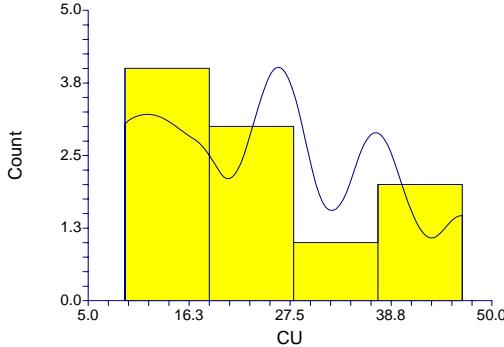
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.023231	Reject Ho	2.2678	0.023342	Reject Ho	2.2300	0.025748	Reject Ho
Diff<0	0.988385	Accept Ho	2.2678	0.988329	Accept Ho	2.3056	0.989433	Accept Ho
Diff>0	0.011615	Reject Ho	2.2678	0.011671	Reject Ho	2.2300	0.012874	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

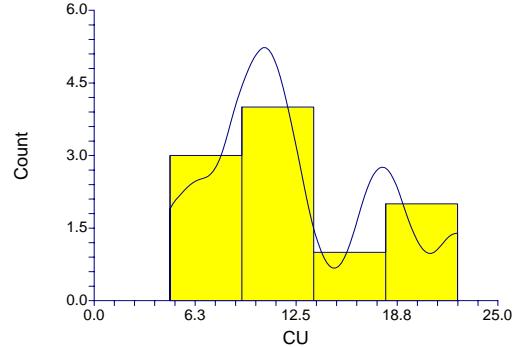
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.600000	0.5623	.050	Reject Ho	0.0524
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.600000	0.5623	.025	Reject Ho	

Plots Section

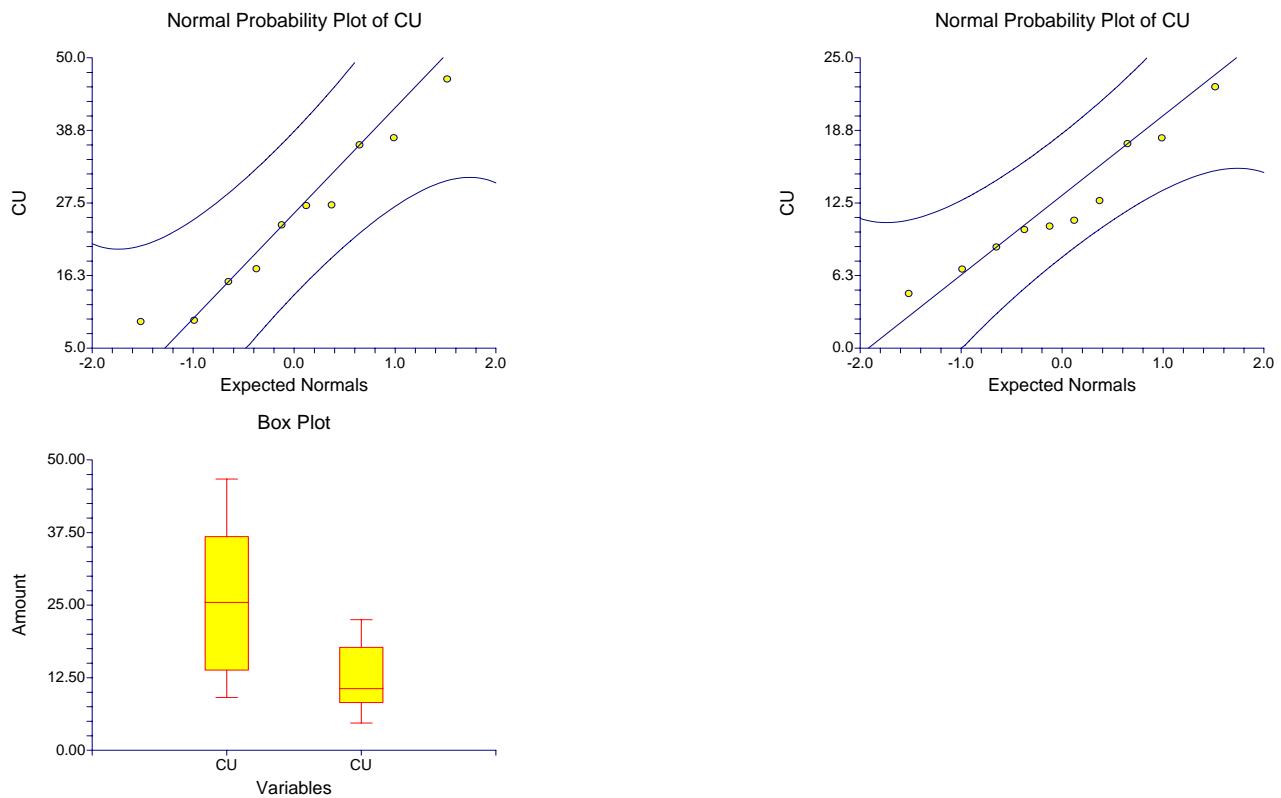
Histogram of CU



Histogram of CU



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
FE	10	19607	17921.02	5667.125	6787.072	32426.93
FE	10	10923	2922.697	924.2379	8832.229	13013.77

Note: T-alpha (FE) = 2.2622, T-alpha (FE) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	8684	12839.49	5741.997	-3379.487	20747.49
Unequal	9.48	8684	18157.79	5741.997	-4206.041	21574.04

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2449

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5124	0.147800	Accept Ho	0.299151	0.115400
Difference < 0	1.5124	0.926100	Accept Ho	0.000959	0.000094
Difference > 0	1.5124	0.073900	Accept Ho	0.424836	0.177377
Difference: (FE)-(FE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5124	0.163043	Accept Ho	0.275175	0.095011
Difference < 0	1.5124	0.918478	Accept Ho	0.001115	0.000129
Difference > 0	1.5124	0.081522	Accept Ho	0.404825	0.153739
Difference: (FE)-(FE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (FE)	2.7456	0.006040	Reject normality
Kurtosis Normality (FE)	2.3088	0.020954	Reject normality
Omnibus Normality (FE)	12.8689	0.001605	Reject normality
Skewness Normality (FE)	0.8920	0.372403	Cannot reject normality
Kurtosis Normality (FE)	-0.1601	0.872817	Cannot reject normality
Omnibus Normality (FE)	0.8213	0.663234	Cannot reject normality
Variance-Ratio Equal-Variance Test	37.5974	0.000009	Reject equal variances
Modified-Levene Equal-Variance Test	3.3911	0.082089	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
FE	10	12500	5860	31300
FE	10	10335	7700	14300

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
FE	62	117	105	13.22876
FE	38	93	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

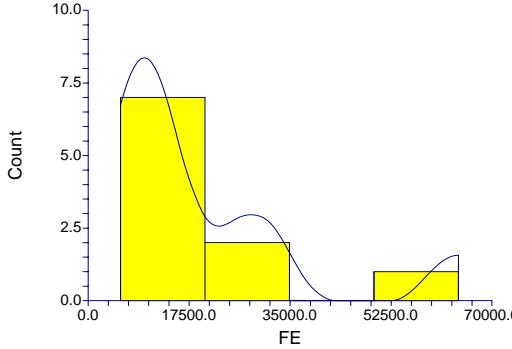
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.393048	Accept Ho	0.9071	0.364346	Accept Ho	0.8693	0.384673	Accept Ho
Diff<0	0.803476	Accept Ho	0.9071	0.817827	Accept Ho	0.9449	0.827648	Accept Ho
Diff>0	0.196524	Accept Ho	0.9071	0.182173	Accept Ho	0.8693	0.192337	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

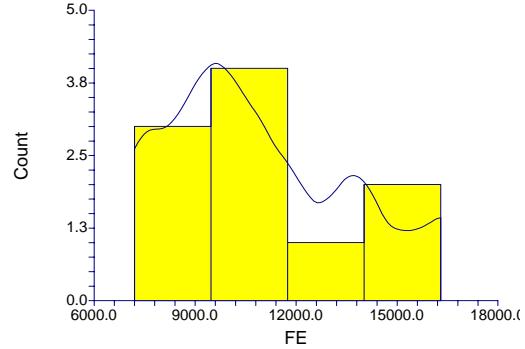
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

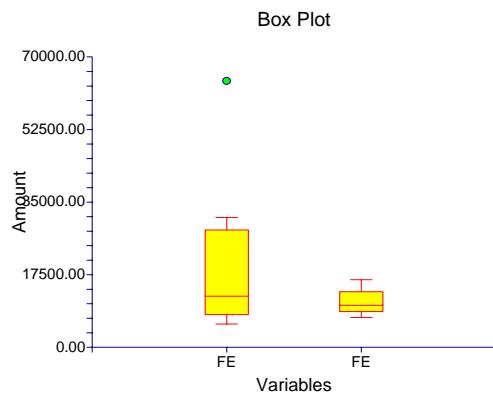
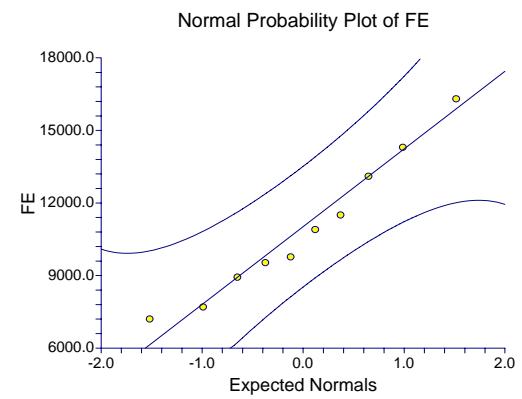
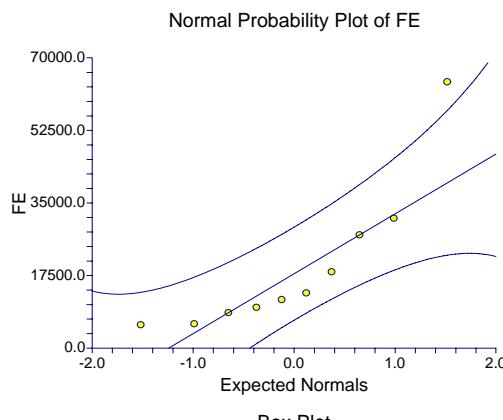
Histogram of FE



Histogram of FE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
PB	10	30.77	24.59978	7.779132	13.17238	48.36762
PB	10	41.64	74.47385	23.5507	-11.63538	94.91538

Note: T-alpha (PB) = 2.2622, T-alpha (PB) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-10.87	55.45946	24.80222	-62.97754	41.23754
Unequal	10.94	-10.87	78.43152	24.80222	-65.49537	43.75537

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2024

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.4383	0.666407	Accept Ho	0.069988	0.016243
Difference < 0	-0.4383	0.333204	Accept Ho	0.110692	0.027449
Difference > 0	-0.4383	0.666796	Accept Ho	0.019364	0.003133
Difference: (PB)-(PB)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.4383	0.669720	Accept Ho	0.068630	0.015532
Difference < 0	-0.4383	0.334860	Accept Ho	0.108769	0.026276
Difference > 0	-0.4383	0.665140	Accept Ho	0.019835	0.003308
Difference: (PB)-(PB)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (PB)	2.2421	0.024957	Reject normality
Kurtosis Normality (PB)	1.6607	0.096784	Cannot reject normality
Omnibus Normality (PB)	7.7846	0.020398	Reject normality
Skewness Normality (PB)	3.8470	0.000120	Reject normality
Kurtosis Normality (PB)	3.4597	0.000541	Reject normality
Omnibus Normality (PB)	26.7687	0.000002	Reject normality
Variance-Ratio Equal-Variance Test	9.1653	0.002904	Reject equal variances
Modified-Levene Equal-Variance Test	0.3217	0.577599	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
PB	10	19.85	11.9	49.9
PB	10	14	11.5	43.2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
PB	62	117	105	13.22876
PB	38	93	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

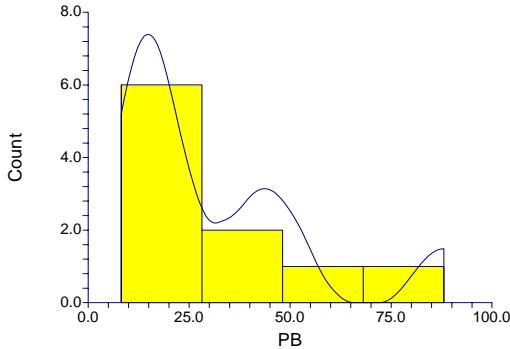
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.393048	Accept Ho	0.9071	0.364346	Accept Ho	0.8693	0.384673	Accept Ho
Diff<0	0.803476	Accept Ho	0.9071	0.817827	Accept Ho	0.9449	0.827648	Accept Ho
Diff>0	0.196524	Accept Ho	0.9071	0.182173	Accept Ho	0.8693	0.192337	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

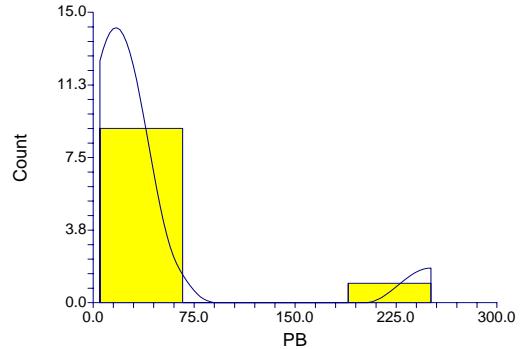
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

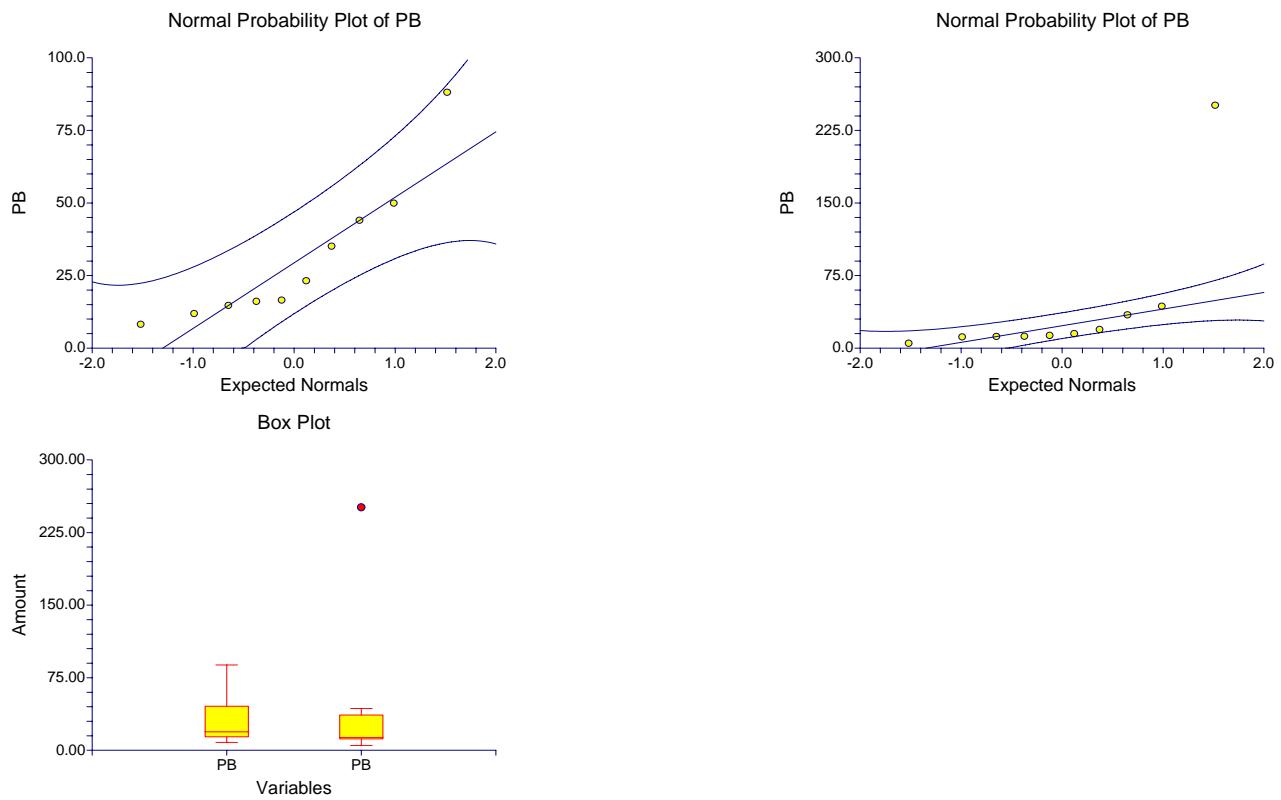
Histogram of PB



Histogram of PB



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MG	10	2969.4	1867.121	590.4355	1633.742	4305.058
MG	10	2597	850.5691	268.9736	1988.54	3205.46

Note: T-alpha (MG) = 2.2622, T-alpha (MG) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	372.4	1450.794	648.8149	-990.7096	1735.51
Unequal	12.58	372.4	2051.733	648.8149	-1034.037	1778.837

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1677

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5740	0.573092	Accept Ho	0.084525	0.021046
Difference < 0	0.5740	0.713454	Accept Ho	0.013980	0.002120
Difference > 0	0.5740	0.286546	Accept Ho	0.137365	0.036416
Difference: (MG)-(MG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5740	0.576106	Accept Ho	0.082927	0.020161
Difference < 0	0.5740	0.711947	Accept Ho	0.014292	0.002228
Difference > 0	0.5740	0.288053	Accept Ho	0.135390	0.035095
Difference: (MG)-(MG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MG)	2.4718	0.013443	Reject normality
Kurtosis Normality (MG)	2.4087	0.016011	Reject normality
Omnibus Normality (MG)	11.9114	0.002591	Reject normality
Skewness Normality (MG)	0.3961	0.692023	Cannot reject normality
Kurtosis Normality (MG)	-0.8233	0.410336	Cannot reject normality
Omnibus Normality (MG)	0.8347	0.658780	Cannot reject normality
Variance-Ratio Equal-Variance Test	4.8187	0.028299	Reject equal variances
Modified-Levene Equal-Variance Test	0.8506	0.368589	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MG	10	2865	952	3650
MG	10	2445	1690	3700

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MG	55	110	105	13.22876
MG	45	100	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

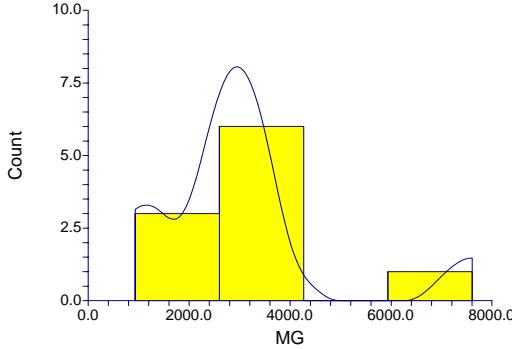
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision (5%)	Z-Value	Prob	Decision (5%)	Z-Value	Prob	Decision (5%)
Diff<>0	0.739364	Accept Ho	0.3780	0.705457	Accept Ho	0.3402	0.733730	Accept Ho
Diff<0	0.630318	Accept Ho	0.3780	0.647272	Accept Ho	0.4158	0.661208	Accept Ho
Diff>0	0.369682	Accept Ho	0.3780	0.352728	Accept Ho	0.3402	0.366865	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

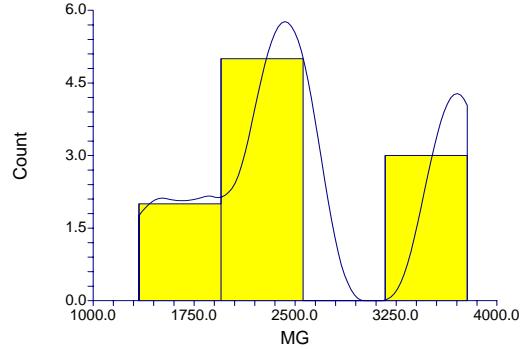
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob
	Criterion Value		Level		Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

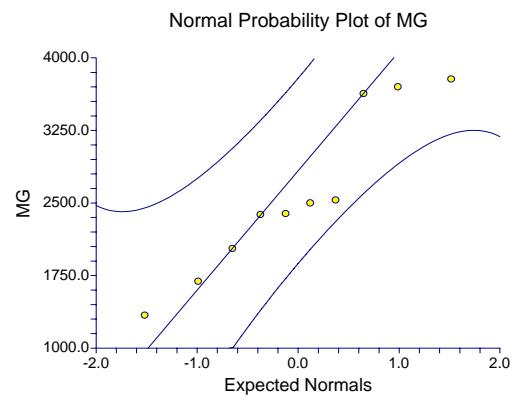
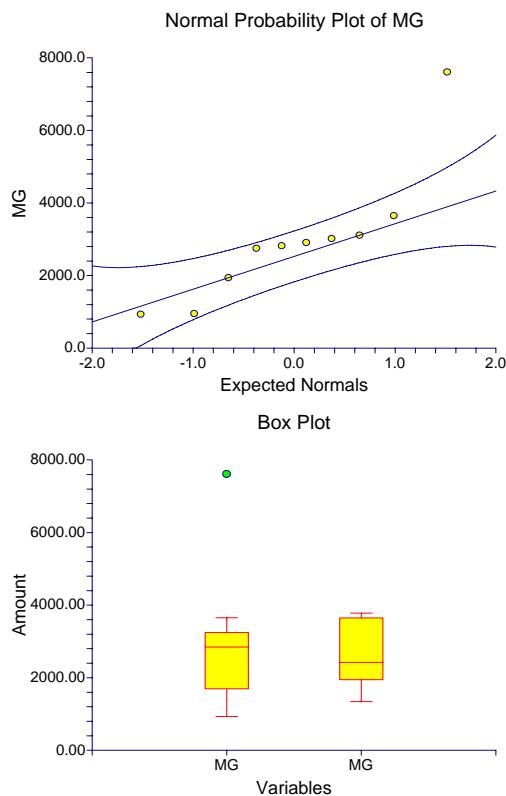
Histogram of MG



Histogram of MG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MN	10	489.1	892.0048	282.0767	-149.0018	1127.202
MN	10	208.28	102.9709	32.56226	134.619	281.9409

Note: T-alpha (MN) = 2.2622, T-alpha (MN) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	280.82	634.9313	283.9499	-315.7366	877.3766
Unequal	9.24	280.82	897.9285	283.9499	-358.9869	920.6269

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2532

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9890	0.335783	Accept Ho	0.155033	0.047299
Difference < 0	0.9890	0.832108	Accept Ho	0.004690	0.000585
Difference > 0	0.9890	0.167892	Accept Ho	0.244188	0.079347
Difference: (MN)-(MN)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9890	0.347864	Accept Ho	0.144351	0.040451
Difference < 0	0.9890	0.826068	Accept Ho	0.005141	0.000713
Difference > 0	0.9890	0.173932	Accept Ho	0.233456	0.070358
Difference: (MN)-(MN)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MN)	3.9006	0.000096	Reject normality
Kurtosis Normality (MN)	3.5075	0.000452	Reject normality
Omnibus Normality (MN)	27.5166	0.000001	Reject normality
Skewness Normality (MN)	1.2019	0.229410	Cannot reject normality
Kurtosis Normality (MN)	-0.1109	0.911722	Cannot reject normality
Omnibus Normality (MN)	1.4568	0.482679	Cannot reject normality
Variance-Ratio Equal-Variance Test	75.0422	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	1.0967	0.308861	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MN	10	206.5	93	409
MN	10	192.5	106	340

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MN	54	109	105	13.22876
MN	46	101	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

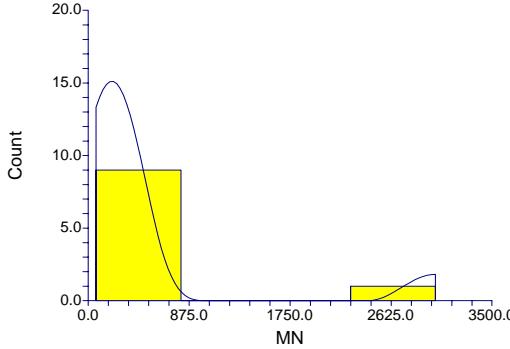
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.795936	Accept Ho	0.3024	0.762369	Accept Ho	0.2646	0.791337	Accept Ho
Diff<0	0.602032	Accept Ho	0.3024	0.618816	Accept Ho	0.3402	0.633135	Accept Ho
Diff>0	0.397968	Accept Ho	0.3024	0.381184	Accept Ho	0.2646	0.395668	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

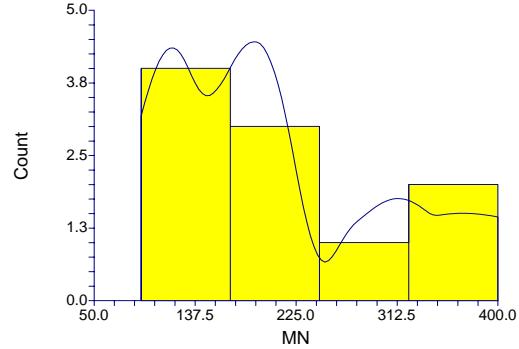
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

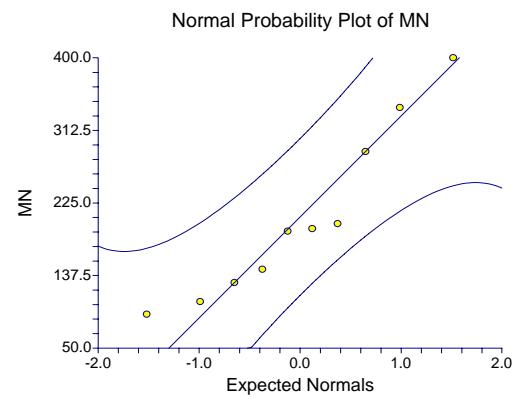
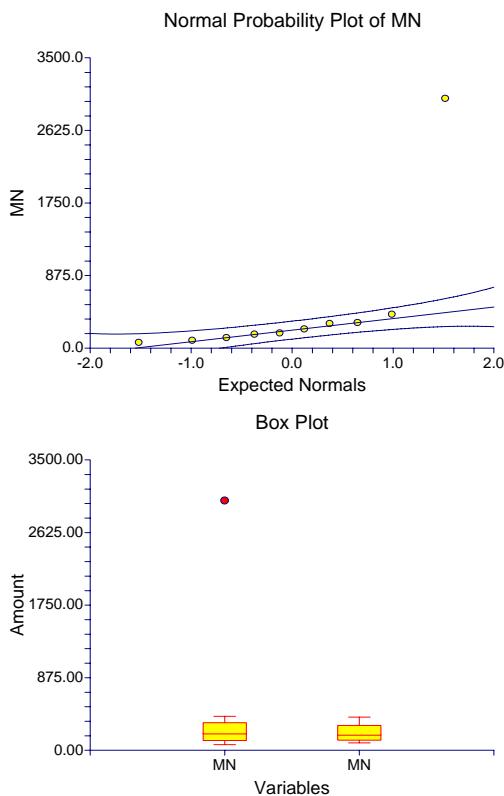
Histogram of MN



Histogram of MN



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
HG	10	0.05966	4.098564E-02	0.0129608	3.034064E-02	8.897936E-02
HG	10	0.11341	0.1944957	6.150493E-02	-2.572383E-02	0.2525438

Note: T-alpha (HG) = 2.2622, T-alpha (HG) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	-0.05375	0.1405496	0.0628557	-0.1858049	7.830493E-02
Unequal	9.80	-0.05375	0.1987672	0.0628557	-0.1941941	8.669411E-02

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2344

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.8551	0.403716	Accept Ho	0.127927	0.036642
Difference < 0	-0.8551	0.201858	Accept Ho	0.205634	0.062589
Difference > 0	-0.8551	0.798142	Accept Ho	0.008777	0.000900
Difference: (HG)-(HG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.8551	0.412900	Accept Ho	0.120938	0.032402
Difference < 0	-0.8551	0.206450	Accept Ho	0.198225	0.056840
Difference > 0	-0.8551	0.793550	Accept Ho	0.007254	0.001044
Difference: (HG)-(HG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (HG)	0.6837	0.494176	Cannot reject normality
Kurtosis Normality (HG)	-0.6448	0.519073	Cannot reject normality
Omnibus Normality (HG)	0.8832	0.643020	Cannot reject normality
Skewness Normality (HG)	3.8392	0.000123	Reject normality
Kurtosis Normality (HG)	3.4581	0.000544	Reject normality
Omnibus Normality (HG)	26.6984	0.000002	Reject normality
Variance-Ratio Equal-Variance Test	22.5194	0.000079	Reject equal variances
Modified-Levene Equal-Variance Test	0.8315	0.373882	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
HG	10	0.05	0.02	0.11
HG	10	0.052	0.024	0.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
HG	49	104	105	13.22378
HG	51	106	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

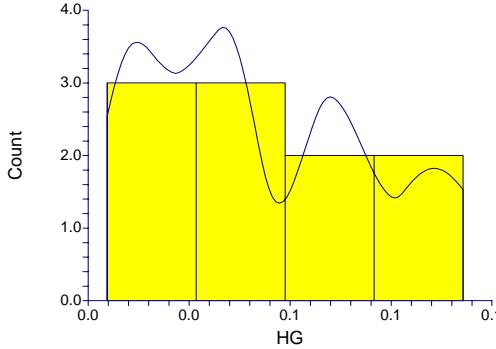
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.0756	0.939720	Accept Ho	-0.0378	0.969839	Accept Ho
Diff<0			-0.0756	0.469860	Accept Ho	-0.0378	0.484919	Accept Ho
Diff>0			-0.0756	0.530140	Accept Ho	-0.1134	0.545156	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

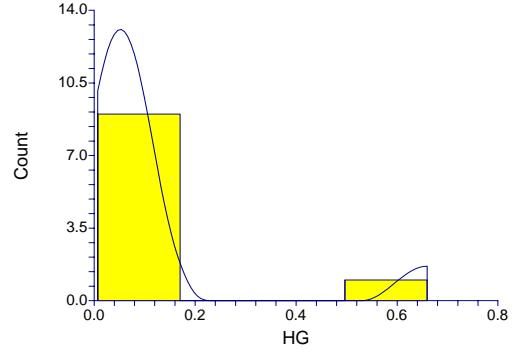
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

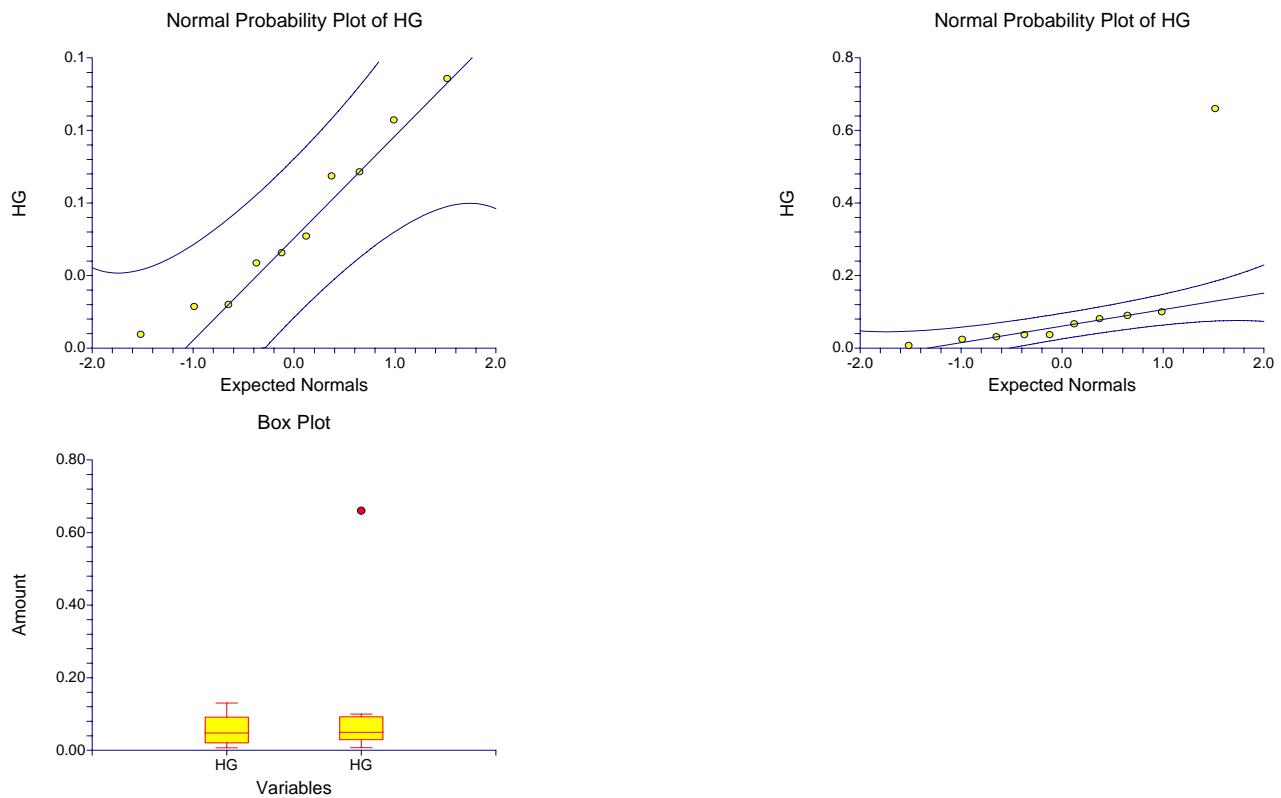
Histogram of HG



Histogram of HG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MO	10	1.822	2.074077	0.6558807	0.3382947	3.305705
MO	10	1.211	1.416933	0.4480735	0.1973872	2.224613

Note: T-alpha (MO) = 2.2622, T-alpha (MO) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.611	1.776161	0.7943233	-1.057811	2.279811
Unequal	15.90	0.611	2.511871	0.7943233	-1.073766	2.295767

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1210

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7692	0.451746	Accept Ho	0.112727	0.030971
Difference < 0	0.7692	0.774127	Accept Ho	0.008516	0.001177
Difference > 0	0.7692	0.225873	Accept Ho	0.182907	0.053375
Difference: (MO)-(MO)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7692	0.453047	Accept Ho	0.111811	0.030410
Difference < 0	0.7692	0.773477	Accept Ho	0.008599	0.001203
Difference > 0	0.7692	0.226523	Accept Ho	0.181913	0.052612
Difference: (MO)-(MO)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MO)	1.9249	0.054239	Cannot reject normality
Kurtosis Normality (MO)	0.4868	0.626402	Cannot reject normality
Omnibus Normality (MO)	3.9423	0.139296	Cannot reject normality
Skewness Normality (MO)	2.4201	0.015518	Reject normality
Kurtosis Normality (MO)	1.6407	0.100853	Cannot reject normality
Omnibus Normality (MO)	8.5487	0.013921	Reject normality
Variance-Ratio Equal-Variance Test	2.1426	0.271697	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.3512	0.560797	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MO	10	0.75	0.4	4.2
MO	10	0.58	0.18	2.7

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MO	64	119	105	13.21383
MO	36	91	105	13.21383

Number Sets of Ties = 3, Multiplicity Factor = 18

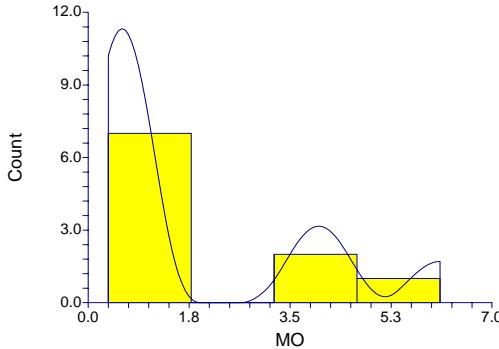
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.0595	0.289374	Accept Ho	1.0217	0.306943	Accept Ho
Diff<0			1.0595	0.855313	Accept Ho	1.0973	0.863753	Accept Ho
Diff>0			1.0595	0.144687	Accept Ho	1.0217	0.153472	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

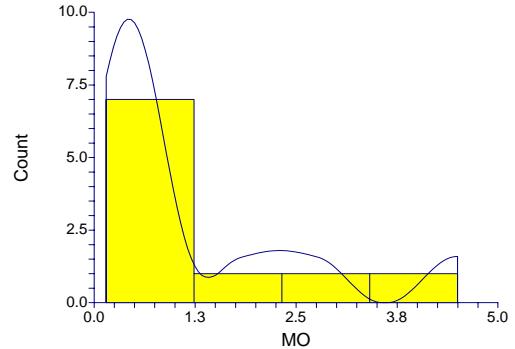
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

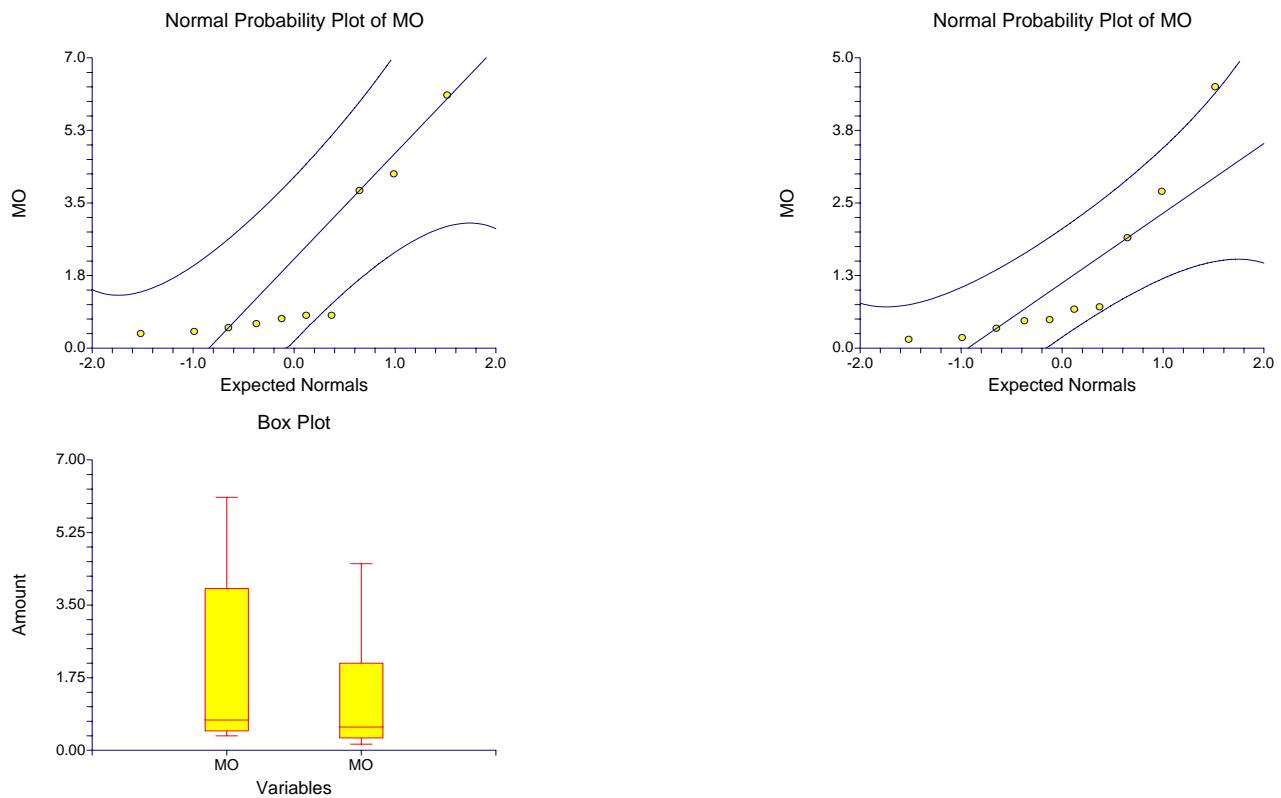
Histogram of MO



Histogram of MO



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NI	10	15.85	8.418927	2.662298	9.827462	21.87254
NI	10	13.35	4.356158	1.377538	10.23379	16.46621

Note: T-alpha (NI) = 2.2622, T-alpha (NI) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	2.5	6.702777	2.997573	-3.797667	8.797668
Unequal	13.50	2.5	9.479158	2.997573	-3.951716	8.951716

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1523

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8340	0.415208	Accept Ho	0.124031	0.035167
Difference < 0	0.8340	0.792396	Accept Ho	0.007173	0.000962
Difference > 0	0.8340	0.207604	Accept Ho	0.199897	0.060217
Difference: (NI)-(NI)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8340	0.418793	Accept Ho	0.121319	0.033481
Difference < 0	0.8340	0.790603	Accept Ho	0.007368	0.001021
Difference > 0	0.8340	0.209397	Accept Ho	0.197033	0.057954
Difference: (NI)-(NI)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NI)	0.8151	0.415019	Cannot reject normality
Kurtosis Normality (NI)	-0.2621	0.793235	Cannot reject normality
Omnibus Normality (NI)	0.7331	0.693128	Cannot reject normality
Skewness Normality (NI)	0.9345	0.350067	Cannot reject normality
Kurtosis Normality (NI)	-0.7637	0.445067	Cannot reject normality
Omnibus Normality (NI)	1.4564	0.482778	Cannot reject normality
Variance-Ratio Equal-Variance Test	3.7351	0.062748	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.8574	0.189729	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NI	10	13.6	7.3	28.4
NI	10	12.15	9.1	19.2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NI	56.5	111.5	105	13.22378
NI	43.5	98.5	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

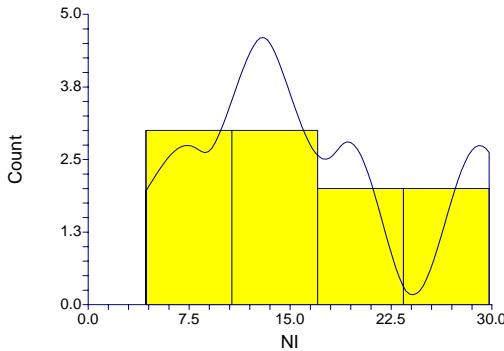
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.4915	0.623046	Accept Ho	0.4537	0.650025	Accept Ho
Diff<0			0.4915	0.688477	Accept Ho	0.5293	0.701718	Accept Ho
Diff>0			0.4915	0.311523	Accept Ho	0.4537	0.325012	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

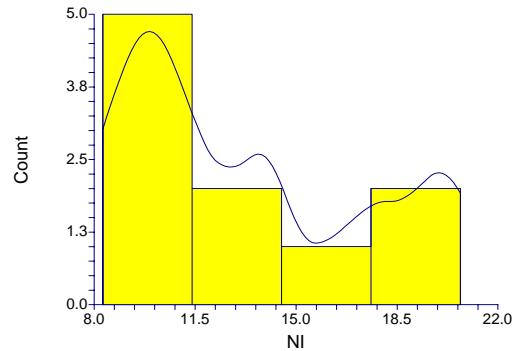
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

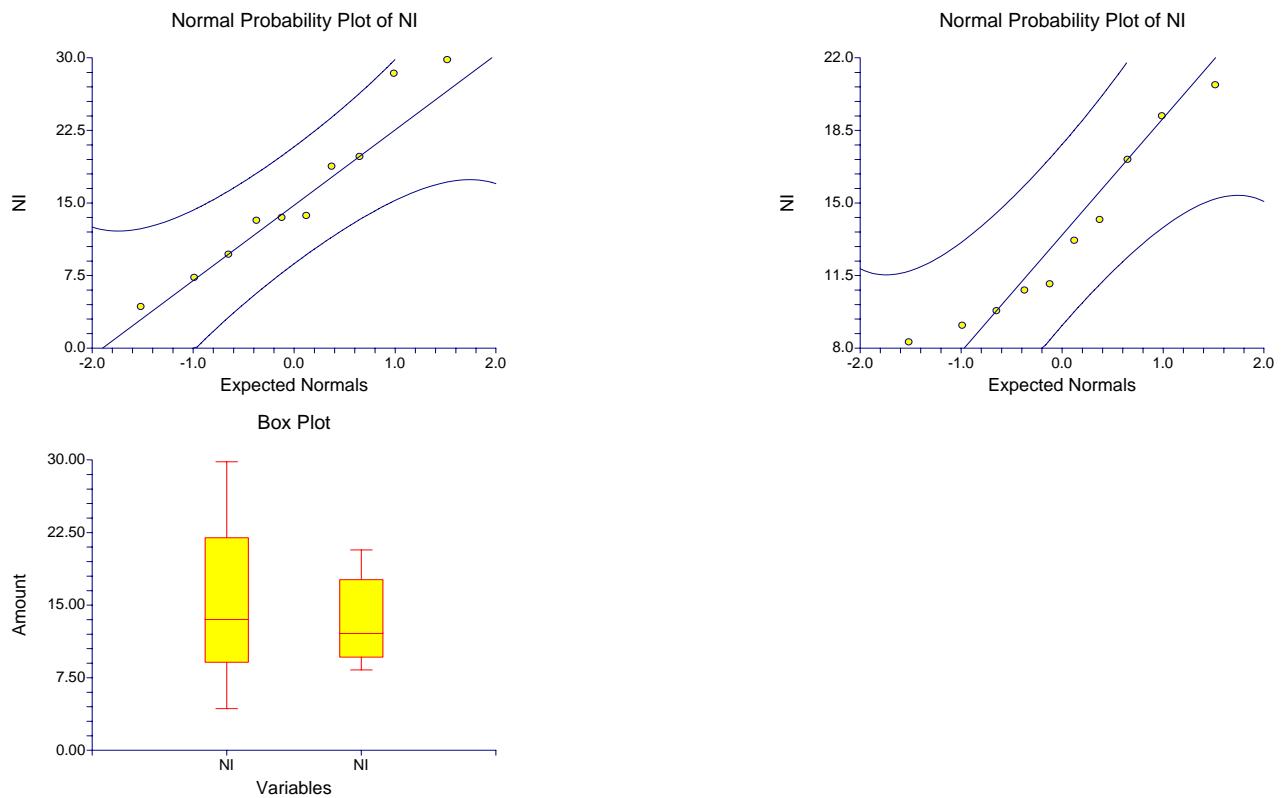
Histogram of NI



Histogram of NI



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
K	10	1490.5	1549.383	489.958	382.138	2598.862
K	10	825.2	364.1995	115.17	564.6674	1085.733

Note: T-alpha (K) = 2.2622, T-alpha (K) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	665.3	1125.44	503.312	-392.1193	1722.719
Unequal	9.99	665.3	1591.612	503.312	-456.2778	1786.878

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2284

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3218	0.202774	Accept Ho	0.240121	0.085183
Difference < 0	1.3218	0.898613	Accept Ho	0.001756	0.000188
Difference > 0	1.3218	0.101387	Accept Ho	0.354674	0.135334
Difference: (K)-(K)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3218	0.215684	Accept Ho	0.223594	0.072445
Difference < 0	1.3218	0.892158	Accept Ho	0.001967	0.000239
Difference > 0	1.3218	0.107842	Accept Ho	0.340008	0.119966
Difference: (K)-(K)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (K)	2.4034	0.016243	Reject normality
Kurtosis Normality (K)	1.4618	0.143788	Cannot reject normality
Omnibus Normality (K)	7.9134	0.019126	Reject normality
Skewness Normality (K)	-0.6439	0.519654	Cannot reject normality
Kurtosis Normality (K)	-1.3368	0.181297	Cannot reject normality
Omnibus Normality (K)	2.2015	0.332615	Cannot reject normality
Variance-Ratio Equal-Variance Test	18.0984	0.000195	Reject equal variances
Modified-Levene Equal-Variance Test	2.6254	0.122556	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
K	10	917.5	377	3580
K	10	976.5	364	1150

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
K	56	111	105	13.22876
K	44	99	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

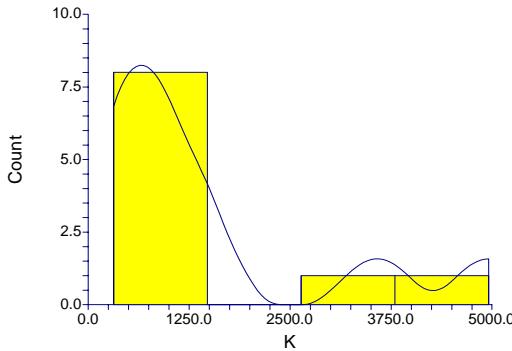
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Z-Value	Prob	Decision	(5%)
Diff<>0	0.684211	Accept Ho	0.4536	0.650147	Accept Ho	0.4158	0.677585	Accept Ho
Diff<0	0.657895	Accept Ho	0.4536	0.674926	Accept Ho	0.4914	0.688412	Accept Ho
Diff>0	0.342105	Accept Ho	0.4536	0.325074	Accept Ho	0.4158	0.338792	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

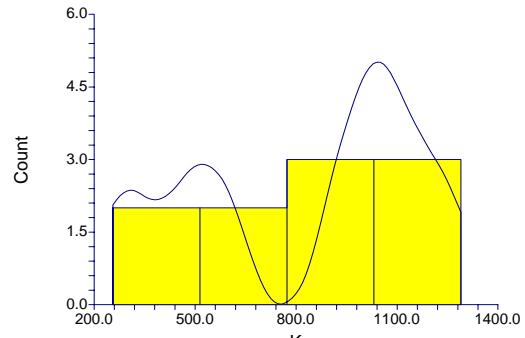
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

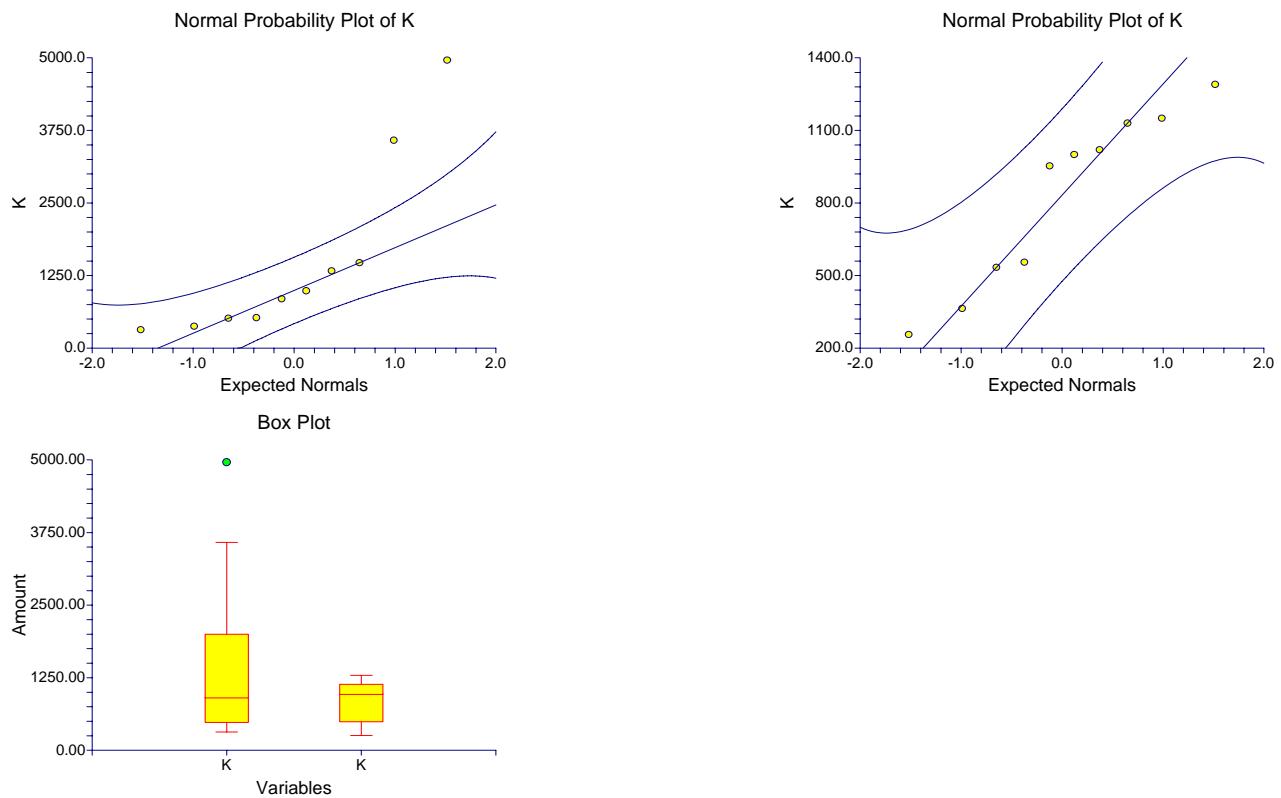
Histogram of K



Histogram of K



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SE	10	0.519	0.2209676	6.987608E-02	0.3609293	0.6770707
SE	10	0.45625	0.2255218	7.131625E-02	0.2949215	0.6175786

Note: T-alpha (SE) = 2.2622, T-alpha (SE) = 2.2622

Confidence-Limits of Difference Section

Variance	DF	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	18	0.06275	0.2232563	9.984325E-02	-0.1470129	0.2725129
Unequal	17.99	0.06275	0.3157321	9.984325E-02	-0.1470191	0.2725191

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1010

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6285	0.537580	Accept Ho	0.091524	0.023436
Difference < 0	0.6285	0.731210	Accept Ho	0.012212	0.001804
Difference > 0	0.6285	0.268790	Accept Ho	0.149224	0.040636
Difference: (SE)-(SE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6285	0.537583	Accept Ho	0.091522	0.023434
Difference < 0	0.6285	0.731208	Accept Ho	0.012213	0.001804
Difference > 0	0.6285	0.268792	Accept Ho	0.149222	0.040634
Difference: (SE)-(SE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SE)	1.8328	0.066839	Cannot reject normality
Kurtosis Normality (SE)	1.0024	0.316156	Cannot reject normality
Omnibus Normality (SE)	4.3638	0.112829	Cannot reject normality
Skewness Normality (SE)	1.6808	0.092808	Cannot reject normality
Kurtosis Normality (SE)	1.2112	0.225821	Cannot reject normality
Omnibus Normality (SE)	4.2920	0.116953	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.0416	0.952532	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0067	0.935601	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
SE	10	0.4275	0.35	0.7
SE	10	0.4025	0.235	0.65

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
SE	59.5	114.5	105	13.21881
SE	40.5	95.5	105	13.21881

Number Sets of Ties = 2, Multiplicity Factor = 12

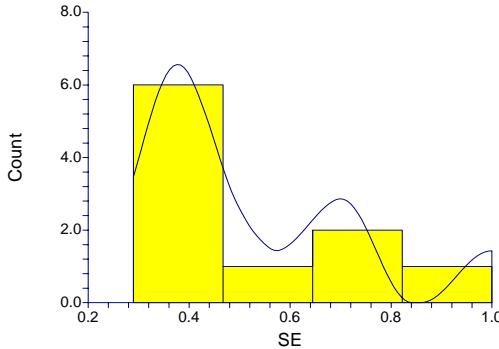
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.7187	0.472342	Accept Ho	0.6808	0.495968	Accept Ho
Diff<0			0.7187	0.763829	Accept Ho	0.7565	0.775325	Accept Ho
Diff>0			0.7187	0.236171	Accept Ho	0.6808	0.247984	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

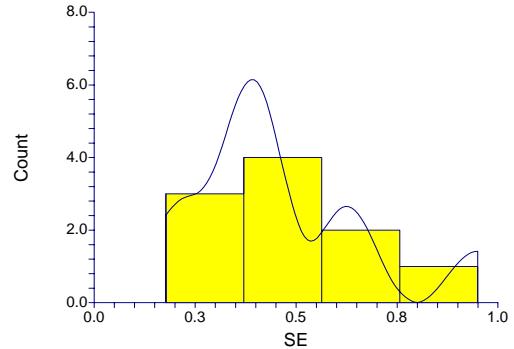
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

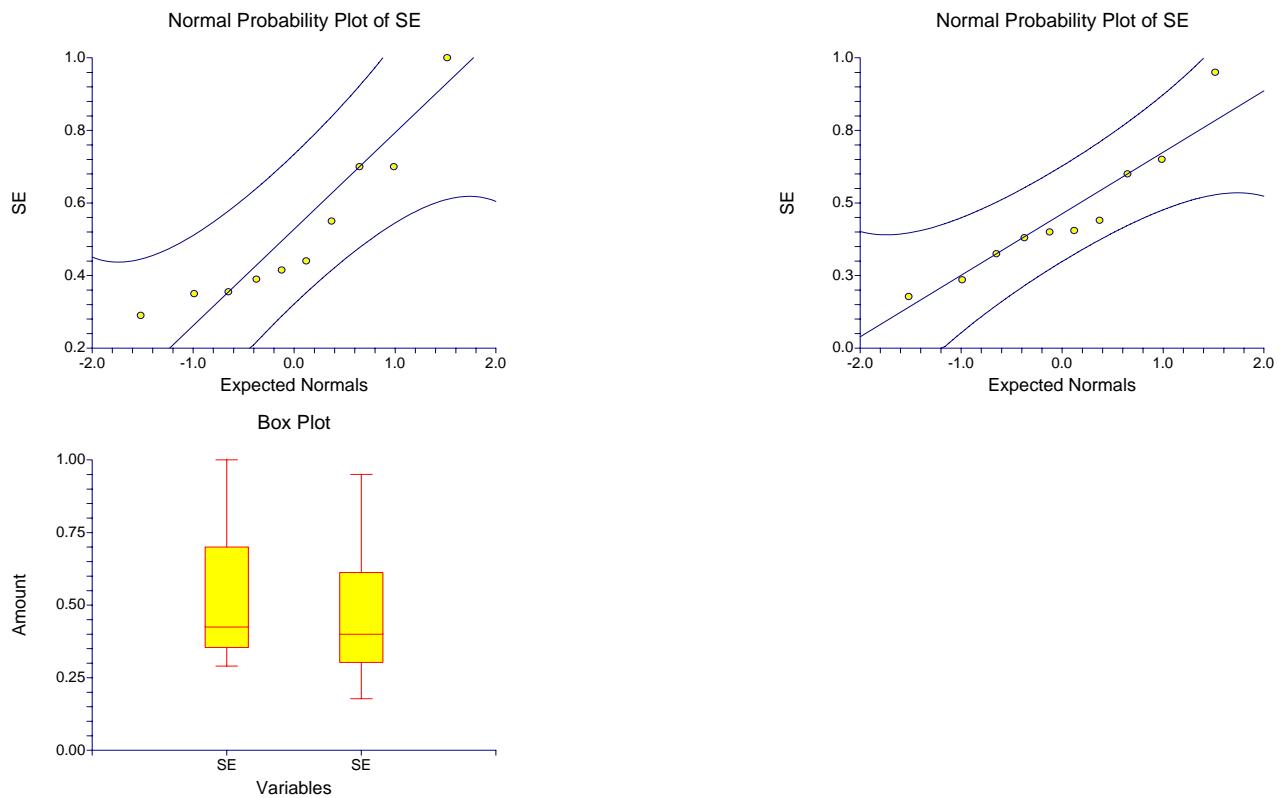
Histogram of SE



Histogram of SE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AG	10	0.1463	9.538699E-02	3.016401E-02	7.806426E-02	0.2145357
AG	10	0.1043	8.070667E-02	2.552169E-02	4.656593E-02	0.1620341

Note: T-alpha (AG) = 2.2622, T-alpha (AG) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.042	8.835226E-02	3.951233E-02	-4.101233E-02	0.1250123
Unequal	17.52	0.042	0.124949	3.951233E-02	-4.117578E-02	0.1251758

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1051

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0630	0.301854	Accept Ho	0.171800	0.054236
Difference < 0	1.0630	0.849073	Accept Ho	0.003801	0.000458
Difference > 0	1.0630	0.150927	Accept Ho	0.267061	0.089960
Difference: (AG)-(AG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0630	0.302233	Accept Ho	0.171425	0.053969
Difference < 0	1.0630	0.848883	Accept Ho	0.003813	0.000461
Difference > 0	1.0630	0.151117	Accept Ho	0.266704	0.089626
Difference: (AG)-(AG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AG)	1.4458	0.148237	Cannot reject normality
Kurtosis Normality (AG)	0.5771	0.563879	Cannot reject normality
Omnibus Normality (AG)	2.4233	0.297701	Cannot reject normality
Skewness Normality (AG)	2.4016	0.016324	Reject normality
Kurtosis Normality (AG)	2.0978	0.035921	Reject normality
Omnibus Normality (AG)	10.1685	0.006194	Reject normality
Variance-Ratio Equal-Variance Test	1.3969	0.626570	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.3722	0.549410	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AG	10	0.13	0.056	0.26
AG	10	0.0885	0.037	0.15

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AG	64.5	119.5	105	13.20387
AG	35.5	90.5	105	13.20387

Number Sets of Ties = 2, Multiplicity Factor = 30

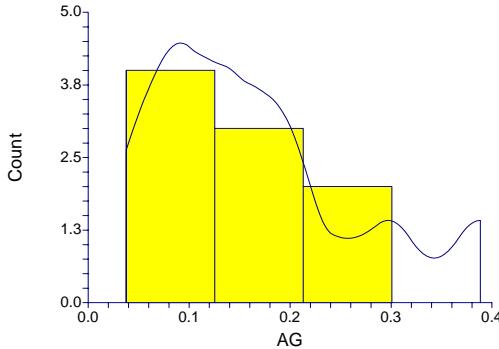
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.0982	0.272133	Accept Ho	1.0603	0.289010	Accept Ho
Diff<0			1.0982	0.863933	Accept Ho	1.1360	0.872028	Accept Ho
Diff>0			1.0982	0.136067	Accept Ho	1.0603	0.144505	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

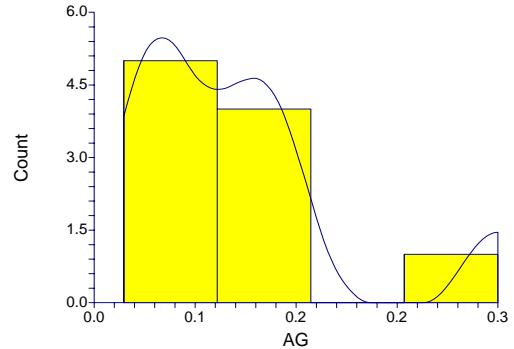
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.5623	.050	Accept Ho	0.7869
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.300000	0.5623	.025	Accept Ho	

Plots Section

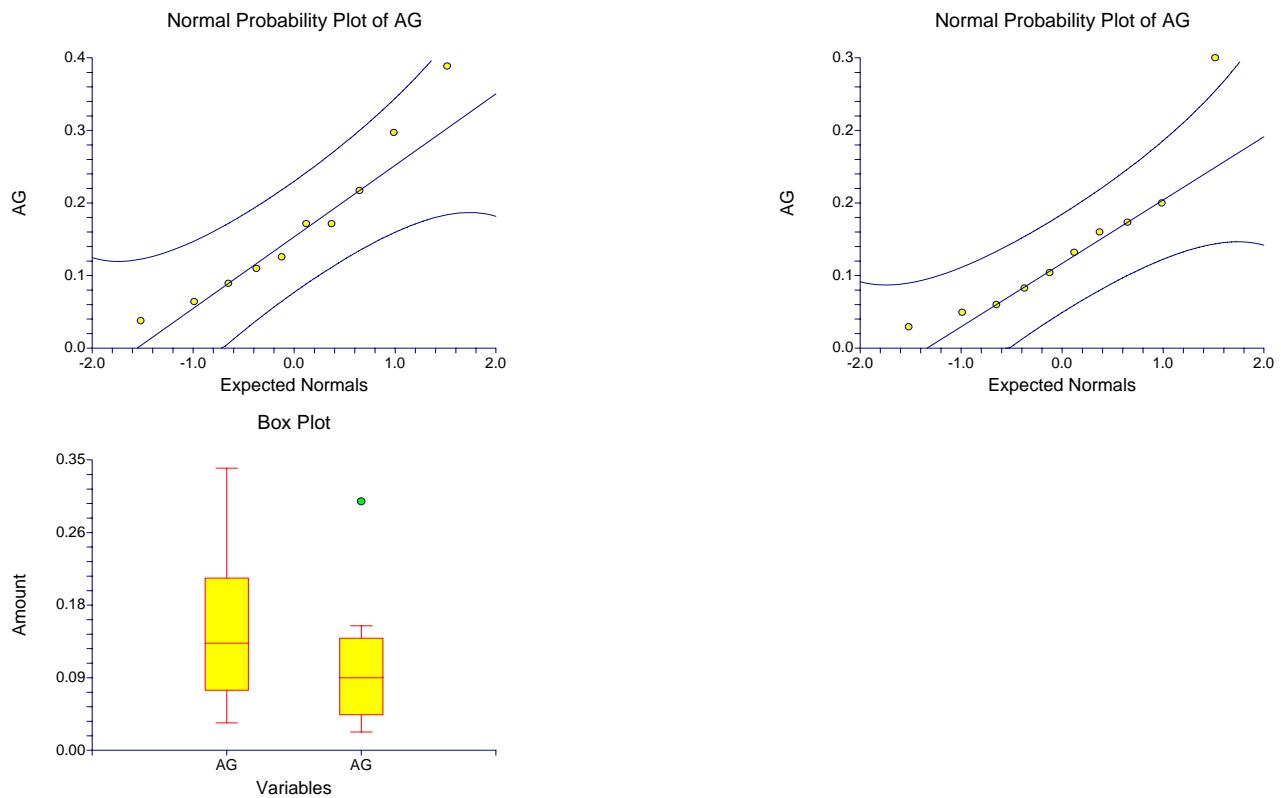
Histogram of AG



Histogram of AG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NA	10	201.51	251.7436	79.60831	21.42348	381.5965
NA	10	110.17	24.73109	7.820657	92.47845	127.8616

Note: T-alpha (NA) = 2.2622, T-alpha (NA) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	91.34	178.8665	79.99154	-76.71599	259.396
Unequal	9.17	91.34	252.9555	79.99154	-89.09249	271.7725

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2556

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1419	0.268471	Accept Ho	0.191063	0.062527
Difference < 0	1.1419	0.865765	Accept Ho	0.003022	0.000351
Difference > 0	1.1419	0.134235	Accept Ho	0.292595	0.102401
Difference: (NA)-(NA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1419	0.282436	Accept Ho	0.176445	0.052417
Difference < 0	1.1419	0.858782	Accept Ho	0.003379	0.000446
Difference > 0	1.1419	0.141218	Accept Ho	0.278721	0.089611
Difference: (NA)-(NA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NA)	3.5980	0.000321	Reject normality
Kurtosis Normality (NA)	3.2361	0.001212	Reject normality
Omnibus Normality (NA)	23.4182	0.000008	Reject normality
Skewness Normality (NA)	0.1505	0.880409	Cannot reject normality
Kurtosis Normality (NA)	-0.1446	0.885063	Cannot reject normality
Omnibus Normality (NA)	0.0435	0.978470	Cannot reject normality
Variance-Ratio Equal-Variance Test	103.6168	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	1.9148	0.183353	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NA	10	96.5	75.6	252
NA	10	106	90.7	137

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NA	49	104	105	13.22876
NA	51	106	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

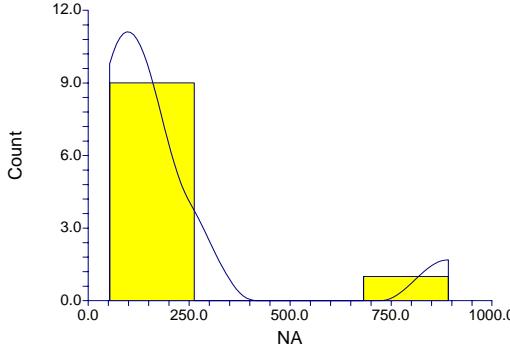
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.970512	Accept Ho	-0.0756	0.939743	Accept Ho	-0.0378	0.969850	Accept Ho
Diff<0	0.485256	Accept Ho	-0.0756	0.469871	Accept Ho	-0.0378	0.484925	Accept Ho
Diff>0	0.514744	Accept Ho	-0.0756	0.530129	Accept Ho	-0.1134	0.545139	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

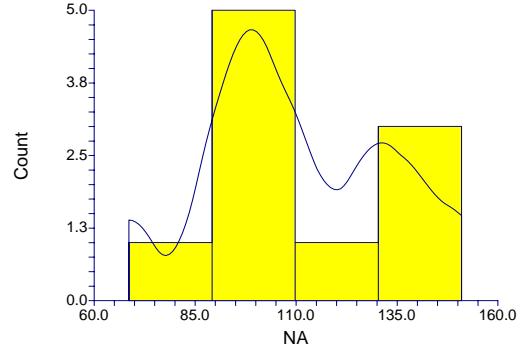
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.300000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

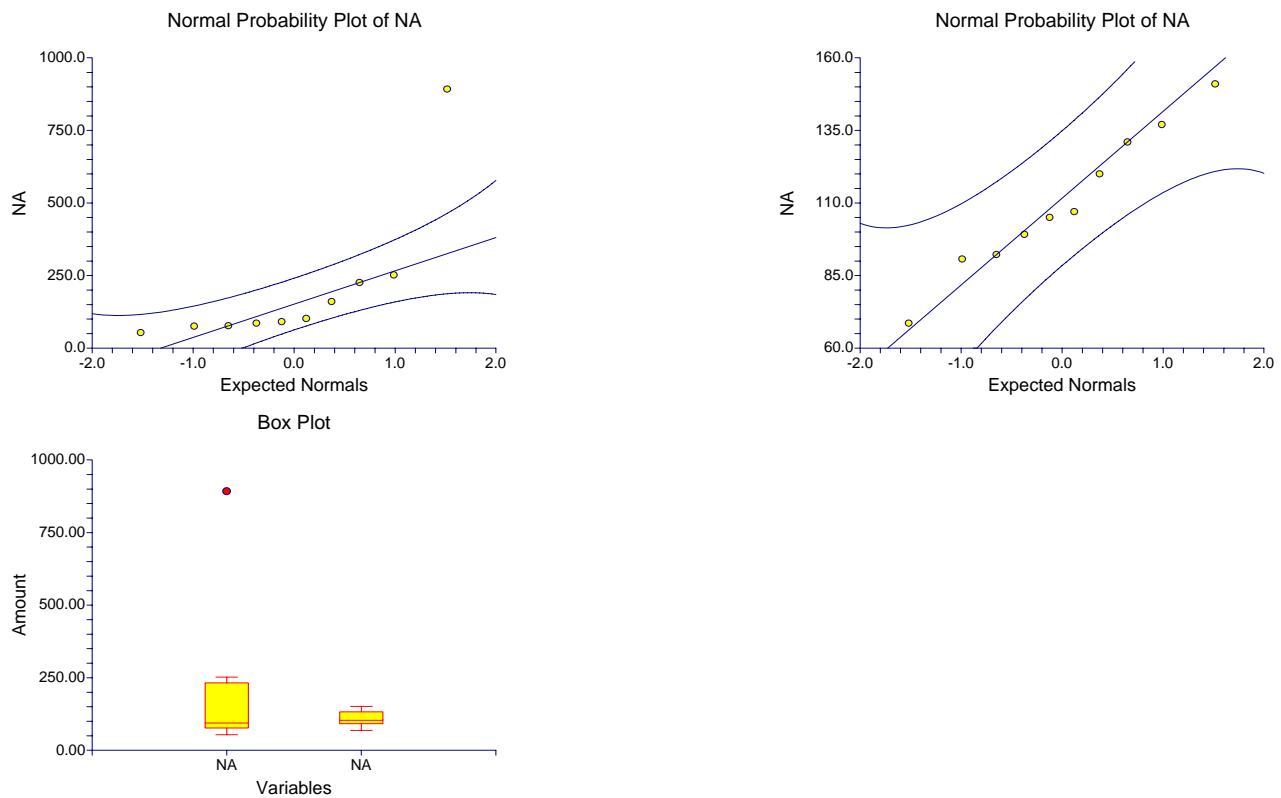
Histogram of NA



Histogram of NA



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TL	10	0.1651	0.1357755	4.293599E-02	6.797205E-02	0.262228
TL	10	0.0928	0.0338454	1.070285E-02	6.858846E-02	0.1170115

Note: T-alpha (TL) = 2.2622, T-alpha (TL) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.0723	9.894569E-02	4.424986E-02	-0.0206655	0.1652655
Unequal	10.11	0.0723	0.1399303	4.424986E-02	-2.614417E-02	0.1707442

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2247

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6339	0.119647	Accept Ho	0.340055	0.138280
Difference < 0	1.6339	0.940176	Accept Ho	0.000641	0.000060
Difference > 0	1.6339	0.059824	Accept Ho	0.471024	0.208076
Difference: (TL)-(TL)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6339	0.132982	Accept Ho	0.316021	0.116127
Difference < 0	1.6339	0.933509	Accept Ho	0.000742	0.000081
Difference > 0	1.6339	0.066491	Accept Ho	0.451827	0.183225
Difference: (TL)-(TL)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TL)	1.6103	0.107336	Cannot reject normality
Kurtosis Normality (TL)	0.1719	0.863542	Cannot reject normality
Omnibus Normality (TL)	2.6226	0.269475	Cannot reject normality
Skewness Normality (TL)	1.1599	0.246102	Cannot reject normality
Kurtosis Normality (TL)	0.2041	0.838310	Cannot reject normality
Omnibus Normality (TL)	1.3869	0.499840	Cannot reject normality
Variance-Ratio Equal-Variance Test	16.0932	0.000316	Reject equal variances
Modified-Levene Equal-Variance Test	4.2522	0.053938	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TL	10	0.0955	0.054	0.35
TL	10	0.0825	0.055	0.12

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TL	56	111	105	13.20885
TL	44	99	105	13.20885

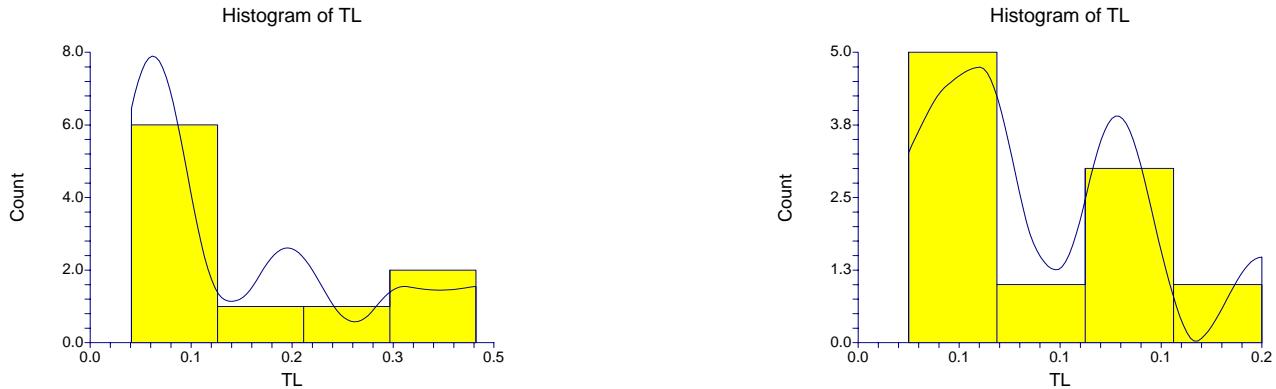
Number Sets of Ties = 4, Multiplicity Factor = 24

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0		0.4542	0.649655	Accept Ho	0.4164	0.677126	Accept Ho	
Diff<0		0.4542	0.675172	Accept Ho	0.4921	0.688674	Accept Ho	
Diff>0		0.4542	0.324828	Accept Ho	0.4164	0.338563	Accept Ho	

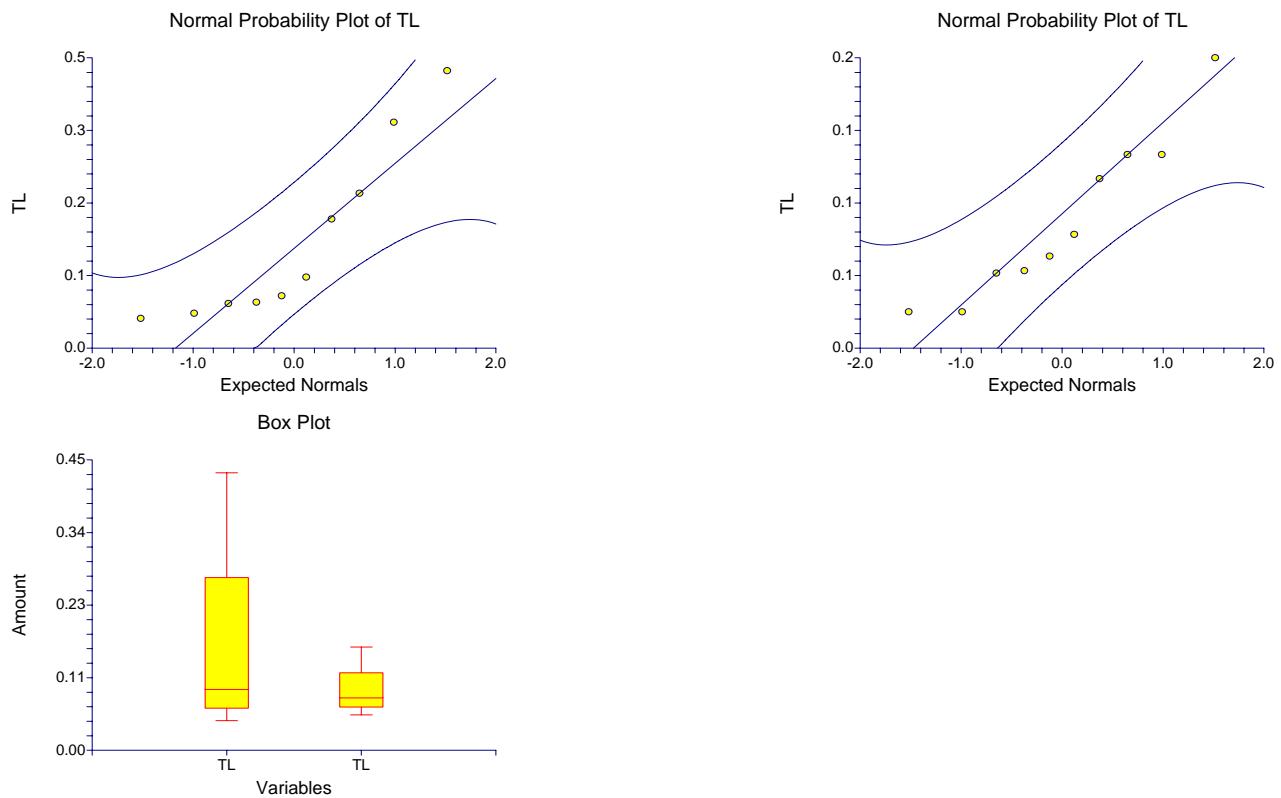
Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TH	10	5.4	3.409464	1.078167	2.961016	7.838984
TH	10	3.58	1.091177	0.3450604	2.799419	4.360581

Note: T-alpha (TH) = 2.2622, T-alpha (TH) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	1.82	2.531315	1.132038	-0.5583246	4.198325
Unequal	10.82	1.82	3.57982	1.132038	-0.6765357	4.316536

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2053

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6077	0.125296	Accept Ho	0.331056	0.133107
Difference < 0	1.6077	0.937352	Accept Ho	0.000700	0.000066
Difference > 0	1.6077	0.062648	Accept Ho	0.461019	0.201211
Difference: (TH)-(TH)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6077	0.136648	Accept Ho	0.311121	0.114825
Difference < 0	1.6077	0.931676	Accept Ho	0.000791	0.000085
Difference > 0	1.6077	0.068324	Accept Ho	0.445010	0.180675
Difference: (TH)-(TH)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TH)	2.6074	0.009123	Reject normality
Kurtosis Normality (TH)	2.2436	0.024860	Reject normality
Omnibus Normality (TH)	11.8321	0.002696	Reject normality
Skewness Normality (TH)	1.9166	0.055294	Cannot reject normality
Kurtosis Normality (TH)	1.7098	0.087301	Cannot reject normality
Omnibus Normality (TH)	6.5966	0.036945	Reject normality
Variance-Ratio Equal-Variance Test	9.7630	0.002284	Reject equal variances
Modified-Levene Equal-Variance Test	2.6267	0.122467	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TH	10	4.7	2.4	7.8
TH	10	3.35	2.6	4.2

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TH	70	125	105	13.22378
TH	30	85	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

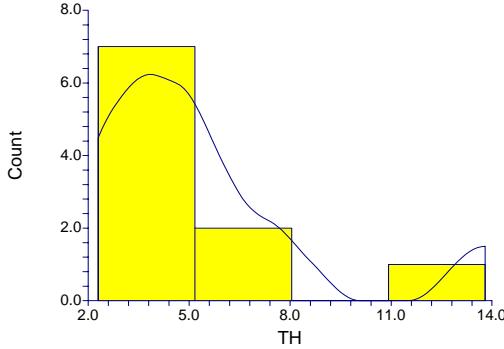
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.5124	0.130425	Accept Ho	1.4746	0.140316	Accept Ho
Diff<0			1.5124	0.934787	Accept Ho	1.5502	0.939458	Accept Ho
Diff>0			1.5124	0.065213	Accept Ho	1.4746	0.070158	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

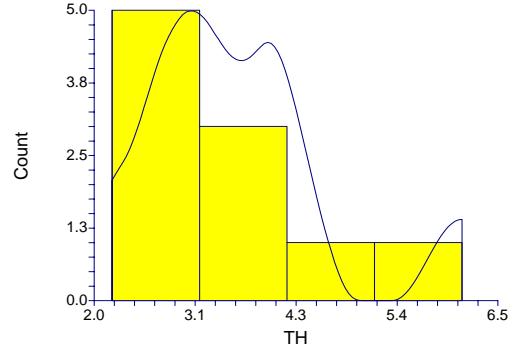
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.500000	0.5623	.025	Accept Ho	

Plots Section

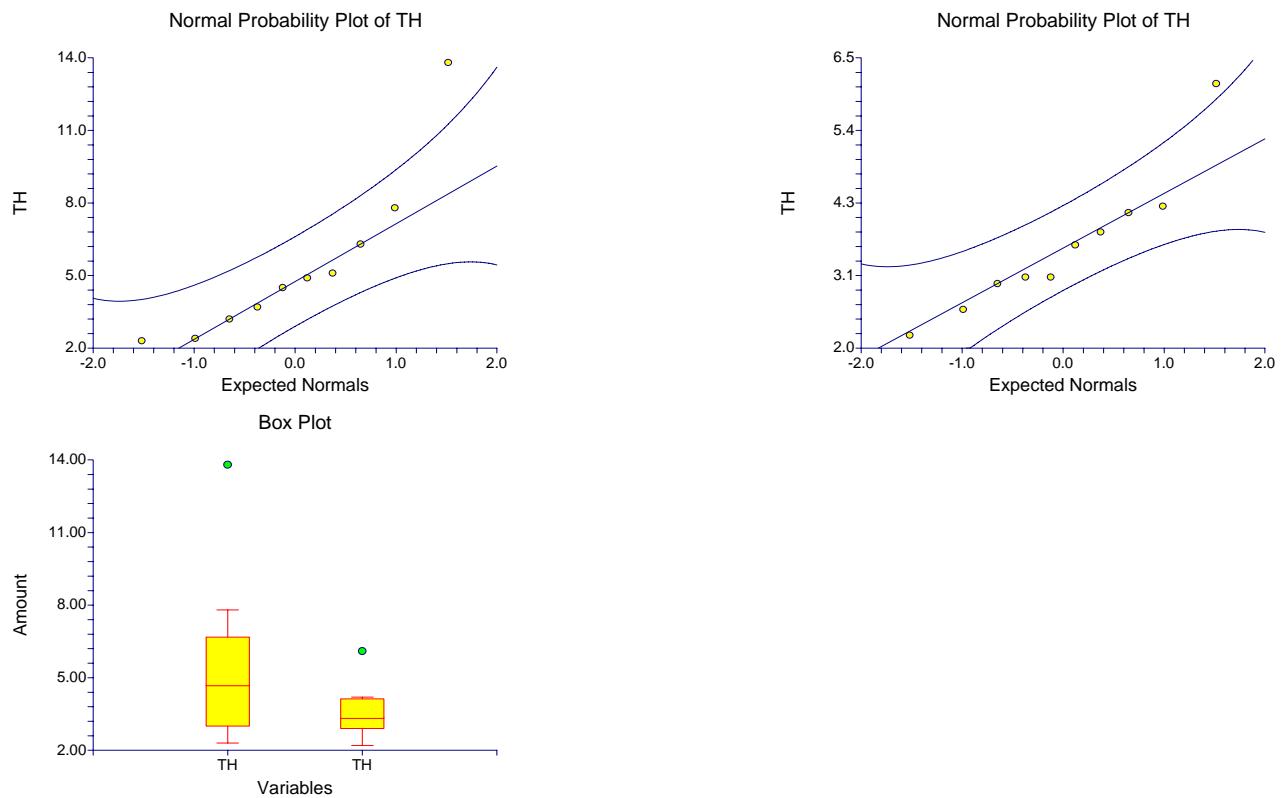
Histogram of TH



Histogram of TH



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TI	10	378	165.3696	52.29446	259.7017	496.2983
TI	10	355.7	112.3932	35.54185	275.2987	436.1013

Note: T-alpha (TI) = 2.2622, T-alpha (TI) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	22.3	141.3848	63.22922	-110.5397	155.1397
Unequal	15.85	22.3	199.9483	63.22922	-111.8414	156.4414

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1215

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3527	0.728421	Accept Ho	0.062896	0.013979
Difference < 0	0.3527	0.635790	Accept Ho	0.023594	0.003977
Difference > 0	0.3527	0.364210	Accept Ho	0.095905	0.022802
Difference: (TI)-(TI)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3527	0.728970	Accept Ho	0.062707	0.013880
Difference < 0	0.3527	0.635515	Accept Ho	0.023689	0.004014
Difference > 0	0.3527	0.364485	Accept Ho	0.095609	0.022626
Difference: (TI)-(TI)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TI)	0.7057	0.480360	Cannot reject normality
Kurtosis Normality (TI)	-0.8982	0.369055	Cannot reject normality
Omnibus Normality (TI)	1.3049	0.520771	Cannot reject normality
Skewness Normality (TI)	0.2395	0.810744	Cannot reject normality
Kurtosis Normality (TI)	-0.2105	0.833240	Cannot reject normality
Omnibus Normality (TI)	0.1017	0.950433	Cannot reject normality
Variance-Ratio Equal-Variance Test	2.1649	0.265406	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.4475	0.244513	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TI	10	350	196	591
TI	10	348.5	215	489

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TI	52	107	105	13.22876
TI	48	103	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

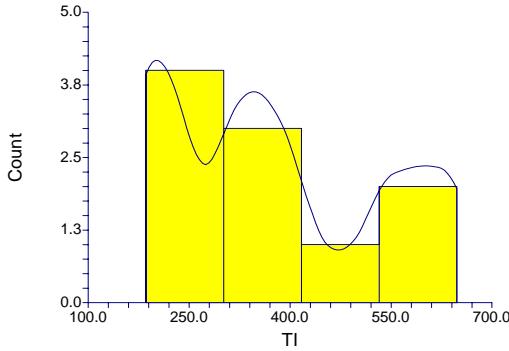
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.911797	Accept Ho	0.1512	0.879829	Accept Ho	0.1134	0.909722	Accept Ho
Diff<0	0.544101	Accept Ho	0.1512	0.560085	Accept Ho	0.1890	0.574947	Accept Ho
Diff>0	0.455899	Accept Ho	0.1512	0.439915	Accept Ho	0.1134	0.454861	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

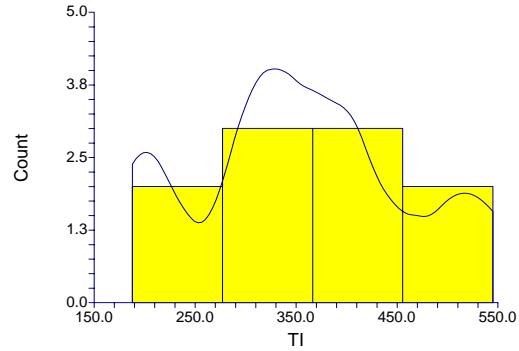
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

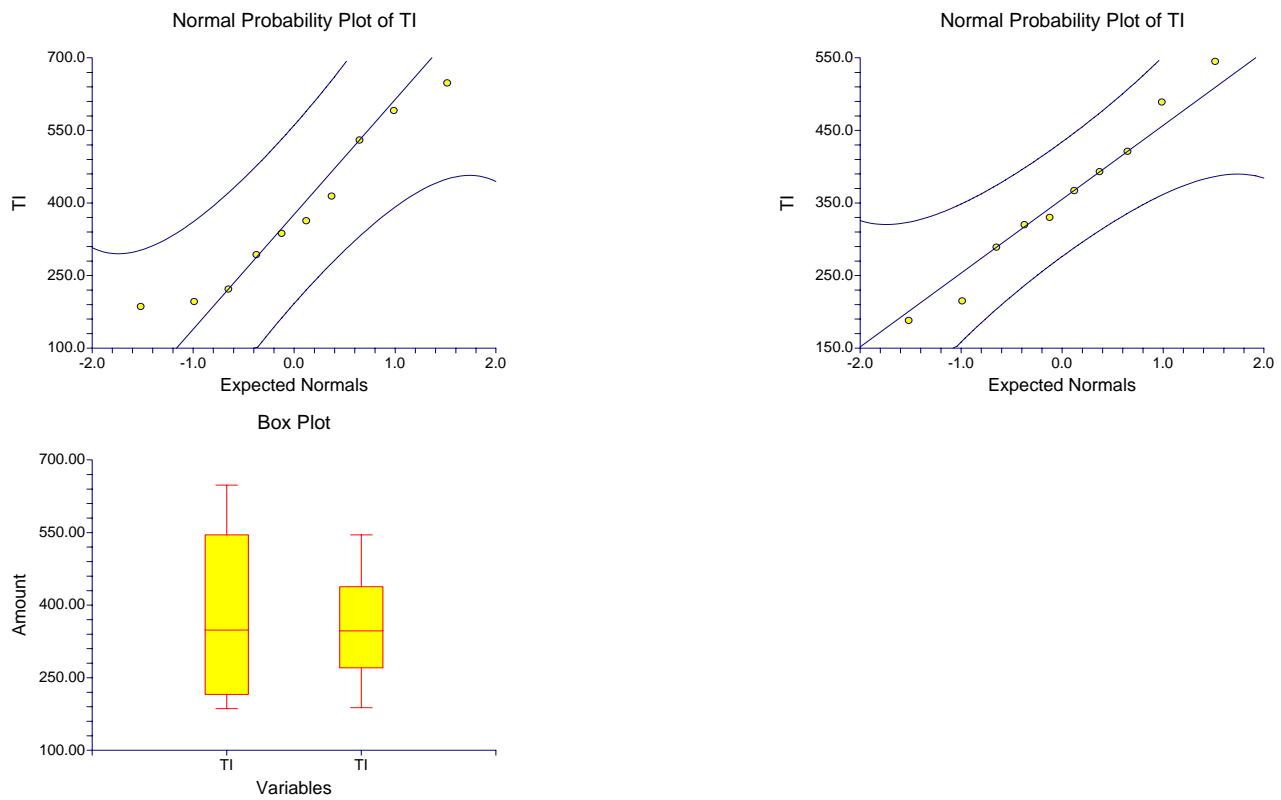
Histogram of TI



Histogram of TI



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
W	10	0.7	0.3195135	0.101039	0.4714338	0.9285662
W	10	0.613	0.3713953	0.1174455	0.3473198	0.8786802

Note: T-alpha (W) = 2.2622, T-alpha (W) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.087	0.346427	0.1549269	-0.2384893	0.4124893
Unequal	17.61	0.087	0.4899217	0.1549269	-0.2390104	0.4130104

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1043

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5616	0.581344	Accept Ho	0.083025	0.020541
Difference < 0	0.5616	0.709328	Accept Ho	0.014412	0.002198
Difference > 0	0.5616	0.290672	Accept Ho	0.134757	0.035507
Difference: (W)-(W)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5616	0.581497	Accept Ho	0.082944	0.020495
Difference < 0	0.5616	0.709251	Accept Ho	0.014429	0.002204
Difference > 0	0.5616	0.290749	Accept Ho	0.134657	0.035440
Difference: (W)-(W)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (W)	0.6165	0.537592	Cannot reject normality
Kurtosis Normality (W)	-0.0877	0.930107	Cannot reject normality
Omnibus Normality (W)	0.3877	0.823775	Cannot reject normality
Skewness Normality (W)	0.3989	0.689961	Cannot reject normality
Kurtosis Normality (W)	-1.2136	0.224907	Cannot reject normality
Omnibus Normality (W)	1.6319	0.442216	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.3511	0.661198	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.2666	0.611939	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
W	10	0.755	0.4	0.96
W	10	0.495	0.24	1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
W	54.5	109.5	105	13.21881
W	45.5	100.5	105	13.21881

Number Sets of Ties = 2, Multiplicity Factor = 12

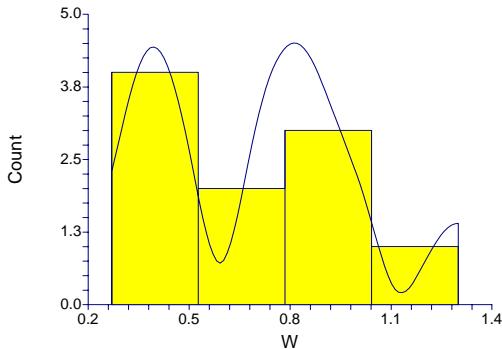
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.3404	0.733537	Accept Ho	0.3026	0.762195	Accept Ho
Diff<0			0.3404	0.633231	Accept Ho	0.3782	0.647377	Accept Ho
Diff>0			0.3404	0.366769	Accept Ho	0.3026	0.381098	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

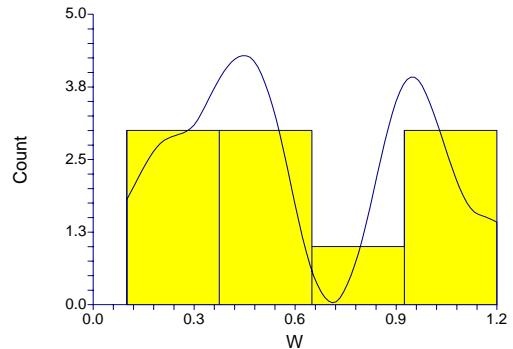
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

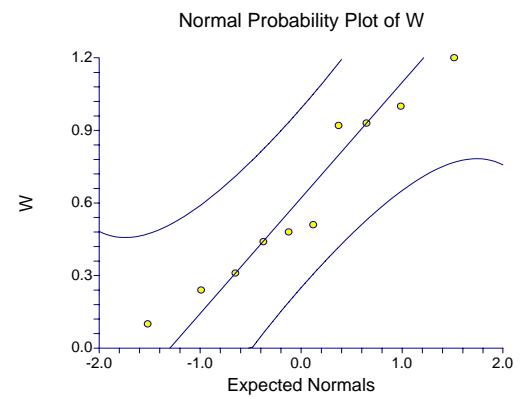
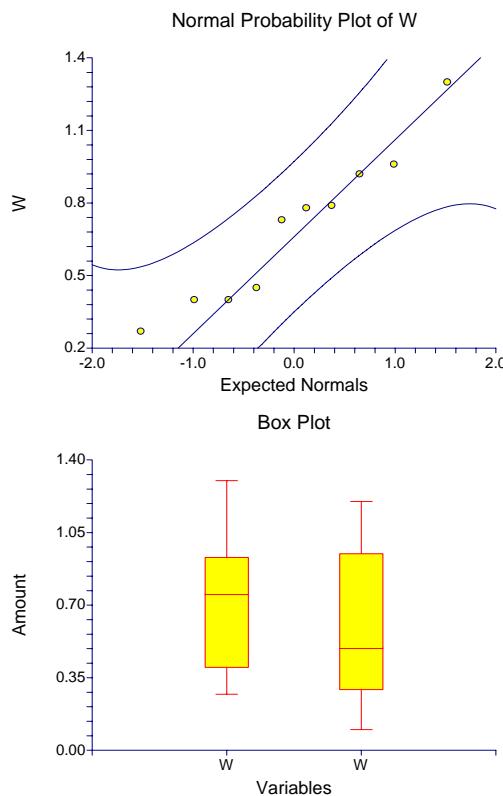
Histogram of W



Histogram of W



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U	10	1.797	1.578495	0.4991639	0.6678129	2.926187
U	10	1.296	0.6229	0.1969783	0.8504041	1.741596

Note: T-alpha (U) = 2.2622, T-alpha (U) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.501	1.199927	0.5366237	-0.6264046	1.628405
Unequal	11.74	0.501	1.696953	0.5366237	-0.6711191	1.673119

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1842

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9336	0.362858	Accept Ho	0.143315	0.042607
Difference < 0	0.9336	0.818571	Accept Ho	0.005471	0.000700
Difference > 0	0.9336	0.181429	Accept Ho	0.227787	0.072045
Difference: (U)-(U)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9336	0.369313	Accept Ho	0.137875	0.039110
Difference < 0	0.9336	0.815344	Accept Ho	0.005746	0.000780
Difference > 0	0.9336	0.184656	Accept Ho	0.222259	0.067453
Difference: (U)-(U)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U)	3.5271	0.000420	Reject normality
Kurtosis Normality (U)	3.1845	0.001450	Reject normality
Omnibus Normality (U)	22.5814	0.000012	Reject normality
Skewness Normality (U)	1.4304	0.152599	Cannot reject normality
Kurtosis Normality (U)	0.0875	0.930244	Cannot reject normality
Omnibus Normality (U)	2.0537	0.358126	Cannot reject normality
Variance-Ratio Equal-Variance Test	6.4217	0.010672	Reject equal variances
Modified-Levene Equal-Variance Test	0.3869	0.541734	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U	10	1.3	0.85	2.2
U	10	1.1	0.76	2.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U	61	116	105	13.19888
U	39	94	105	13.19888

Number Sets of Ties = 3, Multiplicity Factor = 36

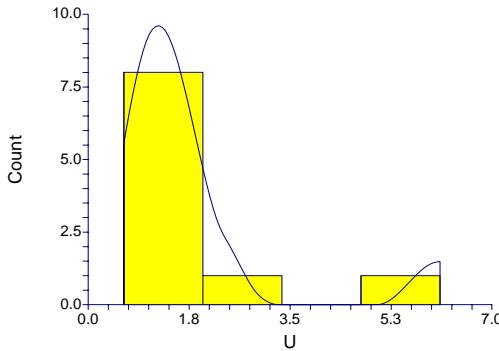
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0		0.8334	0.404617	Accept Ho	0.7955	0.426310	Accept Ho	
Diff<0		0.8334	0.797691	Accept Ho	0.8713	0.808201	Accept Ho	
Diff>0		0.8334	0.202309	Accept Ho	0.7955	0.213155	Accept Ho	

Kolmogorov-Smirnov Test For Different Distributions

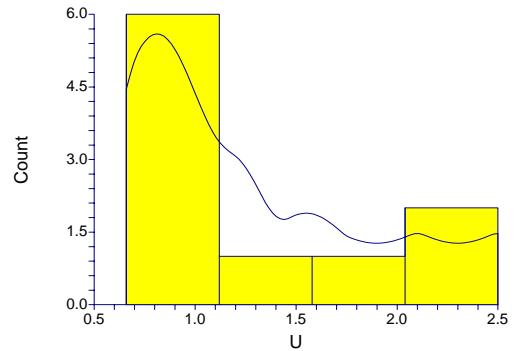
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.100000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

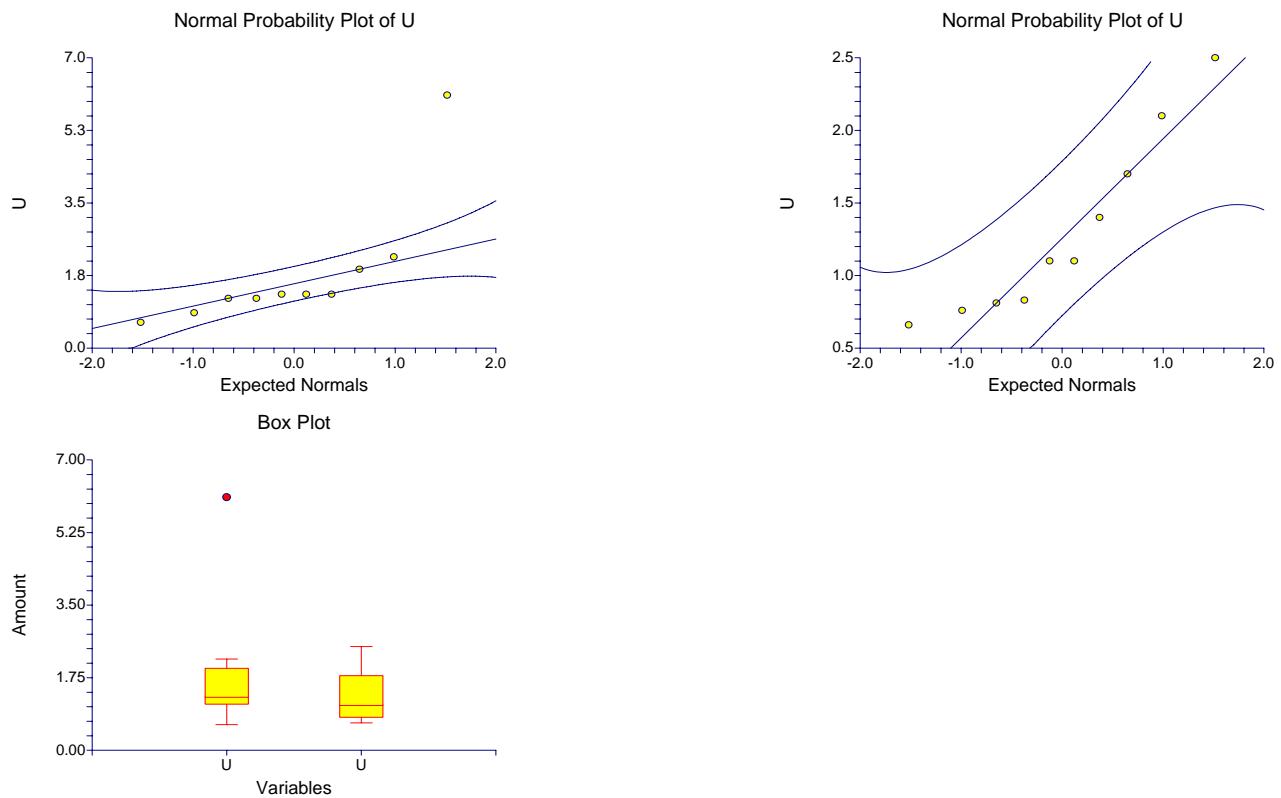
Histogram of U



Histogram of U



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U	9	1.318889	0.481104	0.160368	0.9490796	1.688698
U	10	1.296	0.6229	0.1969783	0.8504041	1.741596

Note: T-alpha (U) = 2.3060, T-alpha (U) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	17	2.288889E-02	0.5606576	0.2576044	-0.5206089	0.5663867
Unequal	16.65	2.288889E-02	0.7870613	0.2540046	-0.5138641	0.5596419

Note: T-alpha (Equal) = 2.1098, T-alpha (Unequal) = 2.1132

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0889	0.930237	Accept Ho	0.050808	0.010243
Difference < 0	0.0889	0.534881	Accept Ho	0.041793	0.008009
Difference > 0	0.0889	0.465119	Accept Ho	0.059442	0.012409
Difference: (U)-(U)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.0901	0.929273	Accept Ho	0.050829	0.010249
Difference < 0	0.0901	0.535363	Accept Ho	0.041692	0.007986
Difference > 0	0.0901	0.464637	Accept Ho	0.059577	0.012443
Difference: (U)-(U)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U)	0.8884	0.374328	Cannot reject normality
Kurtosis Normality (U)	0.5072	0.611999	Cannot reject normality
Omnibus Normality (U)	1.0465	0.592586	Cannot reject normality
Skewness Normality (U)	1.4304	0.152599	Cannot reject normality
Kurtosis Normality (U)	0.0875	0.930244	Cannot reject normality
Omnibus Normality (U)	2.0537	0.358126	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.6763	0.478380	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.6700	0.424379	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U	9	1.3	0.85	1.9
U	10	1.1	0.76	2.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U	51	96	90	12.21518
U	39	94	100	12.21518

Number Sets of Ties = 3, Multiplicity Factor = 36

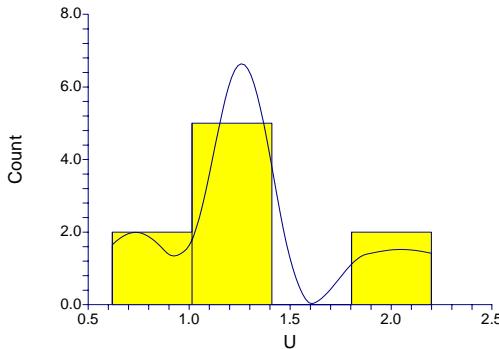
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.4912	0.623290	Accept Ho	0.4503	0.652523	Accept Ho
Diff<0			0.4912	0.688355	Accept Ho	0.5321	0.702680	Accept Ho
Diff>0			0.4912	0.311645	Accept Ho	0.4503	0.326262	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

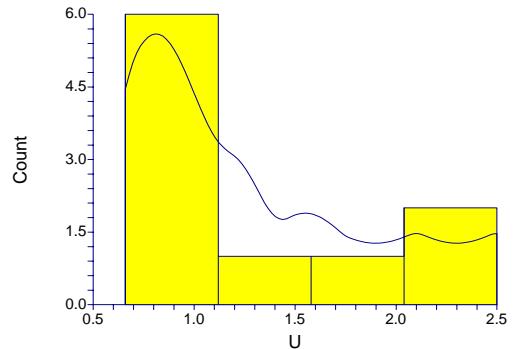
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.377778	0.5760	.050	Accept Ho	0.3926
D(1)<D(2)	0.177778	0.5760	.025	Accept Ho	
D(1)>D(2)	0.377778	0.5760	.025	Accept Ho	

Plots Section

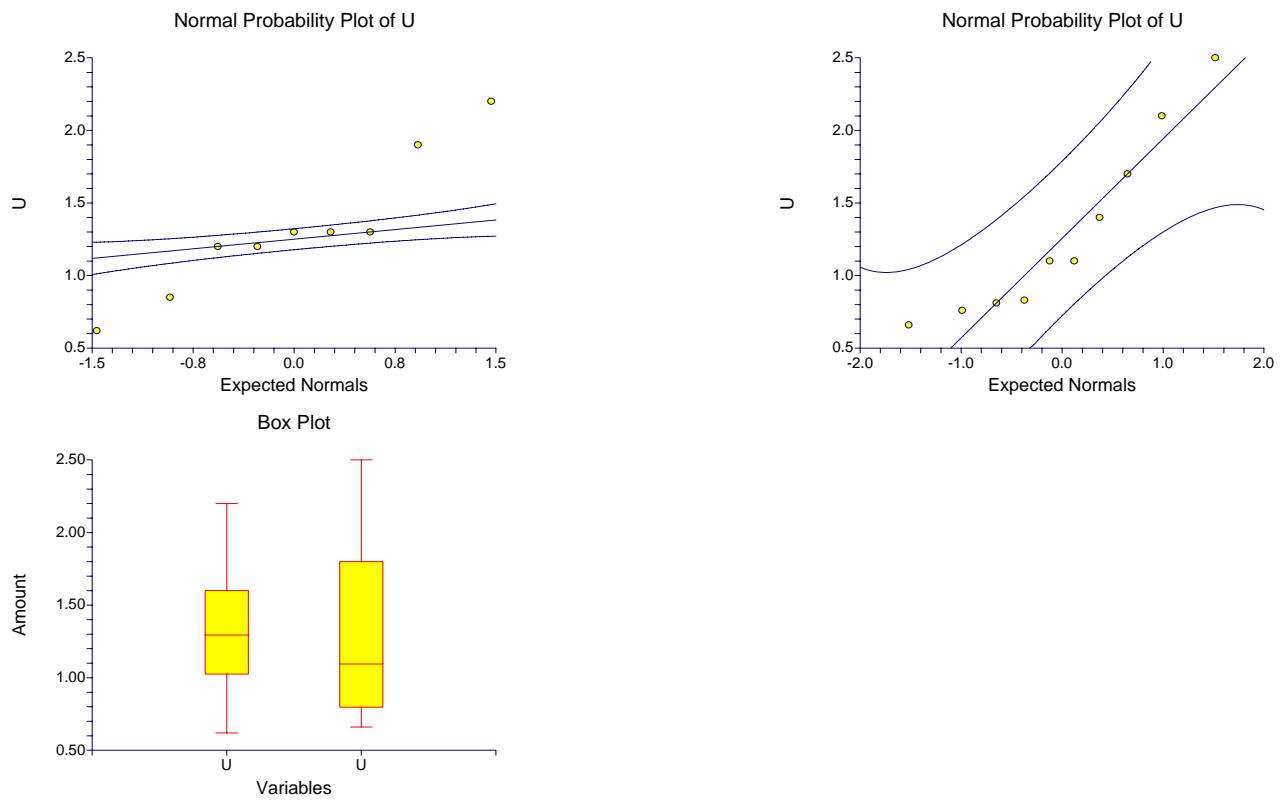
Histogram of U



Histogram of U



Two-Sample Test Report



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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
V	10	19.54	15.14472	4.789182	8.706117	30.37388
V	10	15.02	3.903218	1.234306	12.22781	17.81219

Note: T-alpha (V) = 2.2622, T-alpha (V) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	4.52	11.05888	4.945683	-5.870494	14.91049
Unequal	10.19	4.52	15.63962	4.945683	-6.471827	15.51183

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.2225

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9139	0.372835	Accept Ho	0.139320	0.041037
Difference < 0	0.9139	0.813583	Accept Ho	0.005776	0.000746
Difference > 0	0.9139	0.186417	Accept Ho	0.222107	0.069576
Difference: (V)-(V)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9139	0.381870	Accept Ho	0.131936	0.036412
Difference < 0	0.9139	0.809065	Accept Ho	0.006181	0.000865
Difference > 0	0.9139	0.190935	Accept Ho	0.214494	0.063421
Difference: (V)-(V)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (V)	2.4599	0.013897	Reject normality
Kurtosis Normality (V)	1.5792	0.114286	Cannot reject normality
Omnibus Normality (V)	8.5451	0.013946	Reject normality
Skewness Normality (V)	1.0845	0.278136	Cannot reject normality
Kurtosis Normality (V)	0.0353	0.971851	Cannot reject normality
Omnibus Normality (V)	1.1774	0.555043	Cannot reject normality
Variance-Ratio Equal-Variance Test	15.0549	0.000414	Reject equal variances
Modified-Levene Equal-Variance Test	2.1031	0.164200	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
V	10	14.5	7.5	39.6
V	10	14.35	11.5	19.3

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
V	50.5	105.5	105	13.22378
V	49.5	104.5	105	13.22378

Number Sets of Ties = 1, Multiplicity Factor = 6

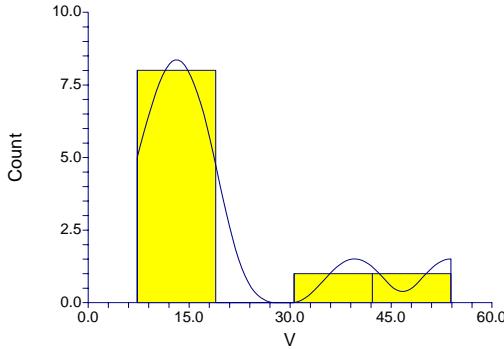
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.0378	0.969839	Accept Ho	0.0000	1.000000	Accept Ho
Diff<0			0.0378	0.515081	Accept Ho	0.0756	0.530140	Accept Ho
Diff>0			0.0378	0.484919	Accept Ho	0.0000	0.500000	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

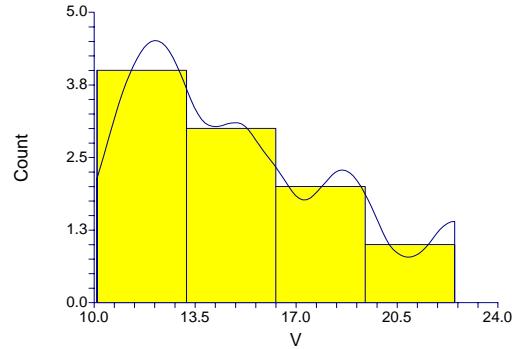
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.5623	.050	Accept Ho	0.9945
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.200000	0.5623	.025	Accept Ho	

Plots Section

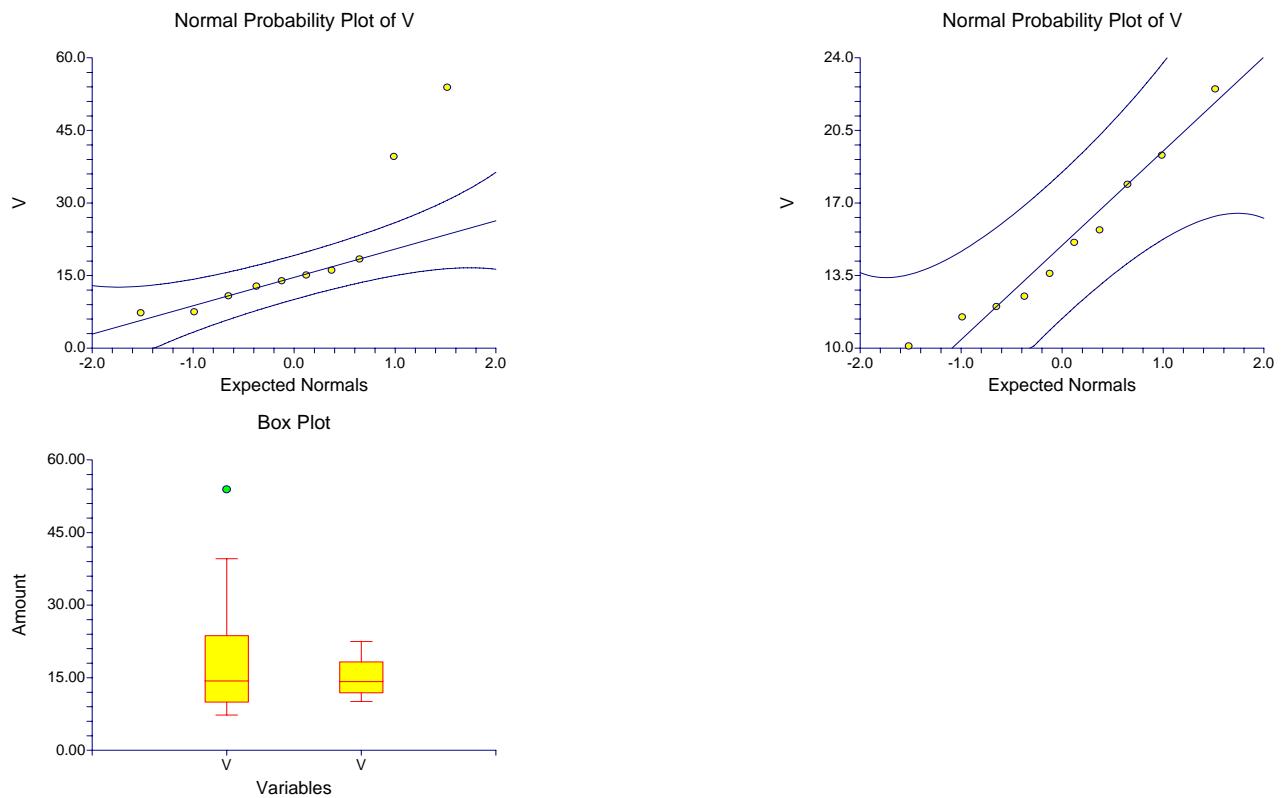
Histogram of V



Histogram of V



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZN	10	41.79	11.40725	3.607291	33.62974	49.95026
ZN	10	34.34	13.14806	4.157783	24.93444	43.74556

Note: T-alpha (ZN) = 2.2622, T-alpha (ZN) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	7.45	12.30847	5.504516	-4.11456	19.01456
Unequal	17.65	7.45	17.40681	5.504516	-4.13108	19.03108

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1039

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3534	0.192670	Accept Ho	0.249431	0.089733
Difference < 0	1.3534	0.903665	Accept Ho	0.001592	0.000168
Difference > 0	1.3534	0.096335	Accept Ho	0.366042	0.141789
Difference: (ZN)-(ZN)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3534	0.192999	Accept Ho	0.248987	0.089362
Difference < 0	1.3534	0.903501	Accept Ho	0.001597	0.000169
Difference > 0	1.3534	0.096499	Accept Ho	0.365661	0.141358
Difference: (ZN)-(ZN)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZN)	-1.3866	0.165575	Cannot reject normality
Kurtosis Normality (ZN)	0.9024	0.366861	Cannot reject normality
Omnibus Normality (ZN)	2.7368	0.254511	Cannot reject normality
Skewness Normality (ZN)	-0.0423	0.966262	Cannot reject normality
Kurtosis Normality (ZN)	-1.0736	0.282980	Cannot reject normality
Omnibus Normality (ZN)	1.1545	0.561437	Cannot reject normality
Variance-Ratio Equal-Variance Test	1.3285	0.679055	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.7250	0.405680	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZN	10	42.45	30.3	54.2
ZN	10	36.45	22	51.4

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZN	67	122	105	13.22876
ZN	33	88	105	13.22876

Number Sets of Ties = 0, Multiplicity Factor = 0

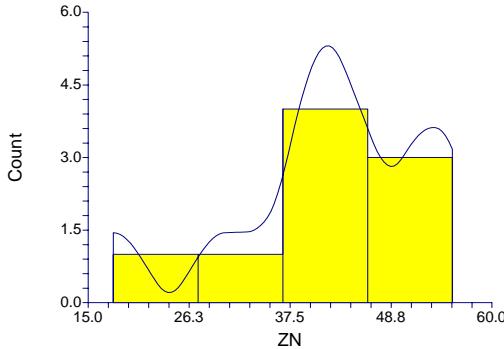
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.217563	Accept Ho	1.2851	0.198765	Accept Ho	1.2473	0.212294	Accept Ho
Diff<0	0.891219	Accept Ho	1.2851	0.900618	Accept Ho	1.3229	0.907062	Accept Ho
Diff>0	0.108781	Accept Ho	1.2851	0.099382	Accept Ho	1.2473	0.106147	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

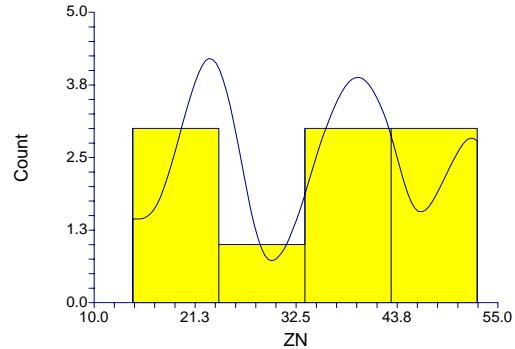
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.5623	.050	Accept Ho	0.4175
D(1)<D(2)	0.000000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.400000	0.5623	.025	Accept Ho	

Plots Section

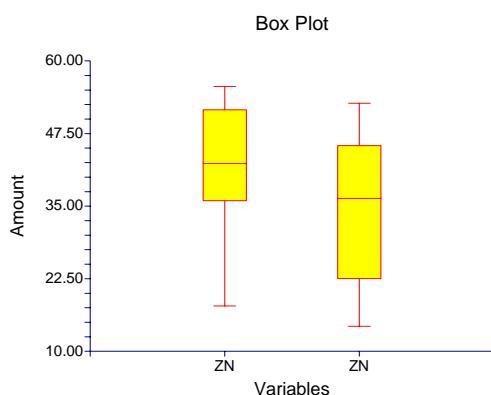
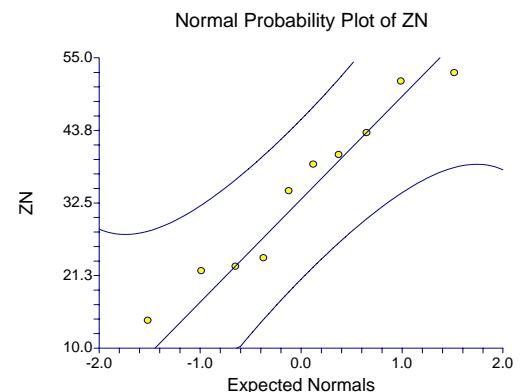
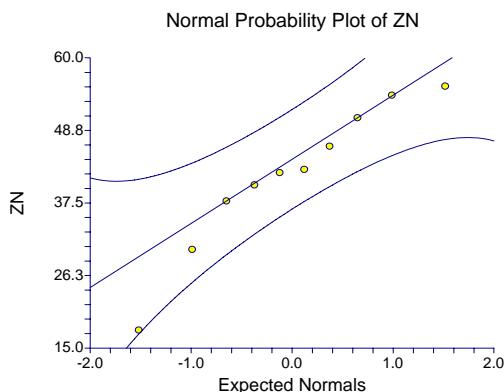
Histogram of ZN



Histogram of ZN



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZR	10	2.15	0.9882645	0.3125167	1.443038	2.856962
ZR	10	1.573	0.4720181	0.1492652	1.235339	1.910661

Note: T-alpha (ZR) = 2.2622, T-alpha (ZR) = 2.2622

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	18	0.577	0.7744249	0.3463333	-0.1506193	1.304619
Unequal	12.90	0.577	1.095202	0.3463333	-0.1717792	1.325779

Note: T-alpha (Equal) = 2.1009, T-alpha (Unequal) = 2.1620

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6660	0.113015	Accept Ho	0.351223	0.144811
Difference < 0	1.6660	0.943492	Accept Ho	0.000575	0.000053
Difference > 0	1.6660	0.056508	Accept Ho	0.483322	0.216683
Difference: (ZR)-(ZR)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6660	0.119785	Accept Ho	0.338480	0.132424
Difference < 0	1.6660	0.940107	Accept Ho	0.000621	0.000062
Difference > 0	1.6660	0.059893	Accept Ho	0.473361	0.203111
Difference: (ZR)-(ZR)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZR)	-0.7544	0.450608	Cannot reject normality
Kurtosis Normality (ZR)	-0.1366	0.891346	Cannot reject normality
Omnibus Normality (ZR)	0.5878	0.745358	Cannot reject normality
Skewness Normality (ZR)	0.3155	0.752400	Cannot reject normality
Kurtosis Normality (ZR)	0.0433	0.965498	Cannot reject normality
Omnibus Normality (ZR)	0.1014	0.950565	Cannot reject normality
Variance-Ratio Equal-Variance Test	4.3836	0.038351	Reject equal variances
Modified-Levene Equal-Variance Test	4.3613	0.051244	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZR	10	2.2	0.75	3.4
ZR	10	1.55	0.96	2.1

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZR	72.5	127.5	105	13.16395
ZR	27.5	82.5	105	13.16395

Number Sets of Ties = 4, Multiplicity Factor = 78

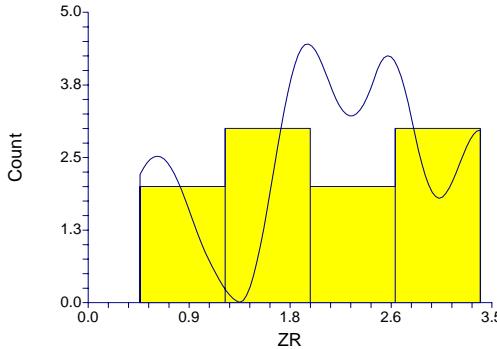
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.7092	0.087411	Accept Ho	1.6712	0.094676	Accept Ho
Diff<0			1.7092	0.956294	Accept Ho	1.7472	0.959698	Accept Ho
Diff>0			1.7092	0.043706	Reject Ho	1.6712	0.047338	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

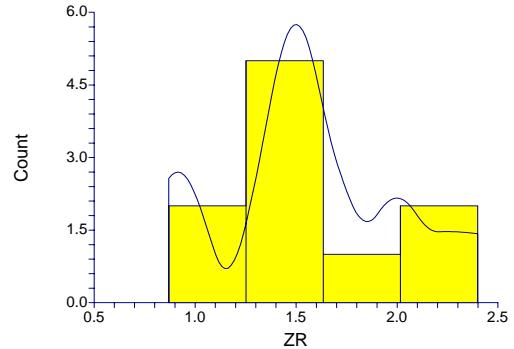
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.5623	.050	Accept Ho	0.1678
D(1)<D(2)	0.200000	0.5623	.025	Accept Ho	
D(1)>D(2)	0.500000	0.5623	.025	Accept Ho	

Plots Section

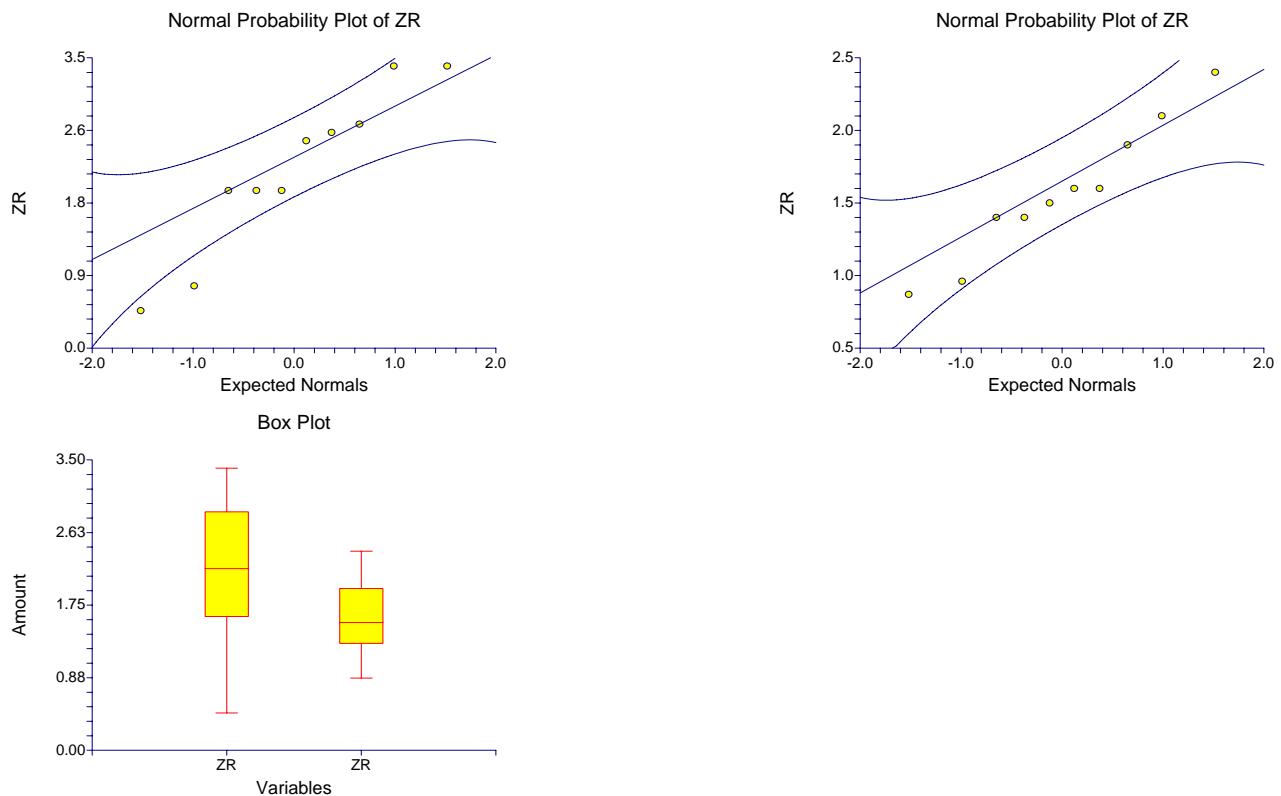
Histogram of ZR



Histogram of ZR



Two-Sample Test Report



E-4 ASSABET RIVER SEDIMENT UPSTREAM VERSUS DOWNSTREAM

Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
DCE11	10	3.1238	7.159753	2.264113	-1.997979	8.245579
DCE11	5	0.7866	0.2126742	9.511077E-02	0.5225301	1.05067

Note: T-alpha (DCE11) = 2.2622, T-alpha (DCE11) = 2.7764

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption Equal	13	2.3372	5.958442	3.263573	-4.713321	9.387721
Unequal	9.03	2.3372	7.16291	2.266109	-2.786352	7.460752

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2609

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7161	0.486566	Accept Ho	0.101931	0.026554
Difference < 0	0.7161	0.756717	Accept Ho	0.010029	0.001468
Difference > 0	0.7161	0.243283	Accept Ho	0.167141	0.046380
Difference: (DCE11)-(DCE11)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.0314	0.329193	Accept Ho	0.152299	0.043226
Difference < 0	1.0314	0.835403	Accept Ho	0.004603	0.000632
Difference > 0	1.0314	0.164597	Accept Ho	0.245104	0.074963
Difference: (DCE11)-(DCE11)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (DCE11)	3.9243	0.000087	Reject normality
Kurtosis Normality (DCE11)	3.5253	0.000423	Reject normality
Omnibus Normality (DCE11)	27.8280	0.000001	Reject normality
Skewness Normality (DCE11)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (DCE11)			
Omnibus Normality (DCE11)			
Variance-Ratio Equal-Variance Test	1133.3566	0.000004	Reject equal variances
Modified-Levene Equal-Variance Test	0.6077	0.449619	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
DCE11	10	0.53375	0.451	2.6
DCE11	5	0.8		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
DCE11	17	72	80	8.164966
DCE11	33	48	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

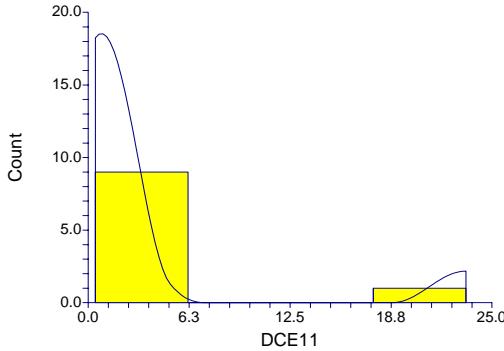
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.370962	Accept Ho	0.9798	0.327187	Accept Ho	0.9186	0.358326	Accept Ho
Diff<0	0.185481	Accept Ho	0.9798	0.163593	Accept Ho	0.9186	0.179163	Accept Ho
Diff>0	0.814519	Accept Ho	0.9798	0.836407	Accept Ho	1.0410	0.851070	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

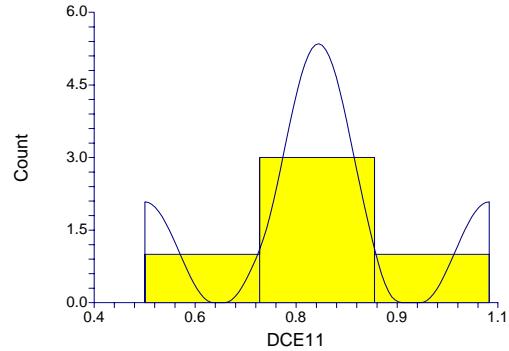
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.500000	0.6698	.050	Accept Ho	0.3506
D(1)<D(2)	0.500000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

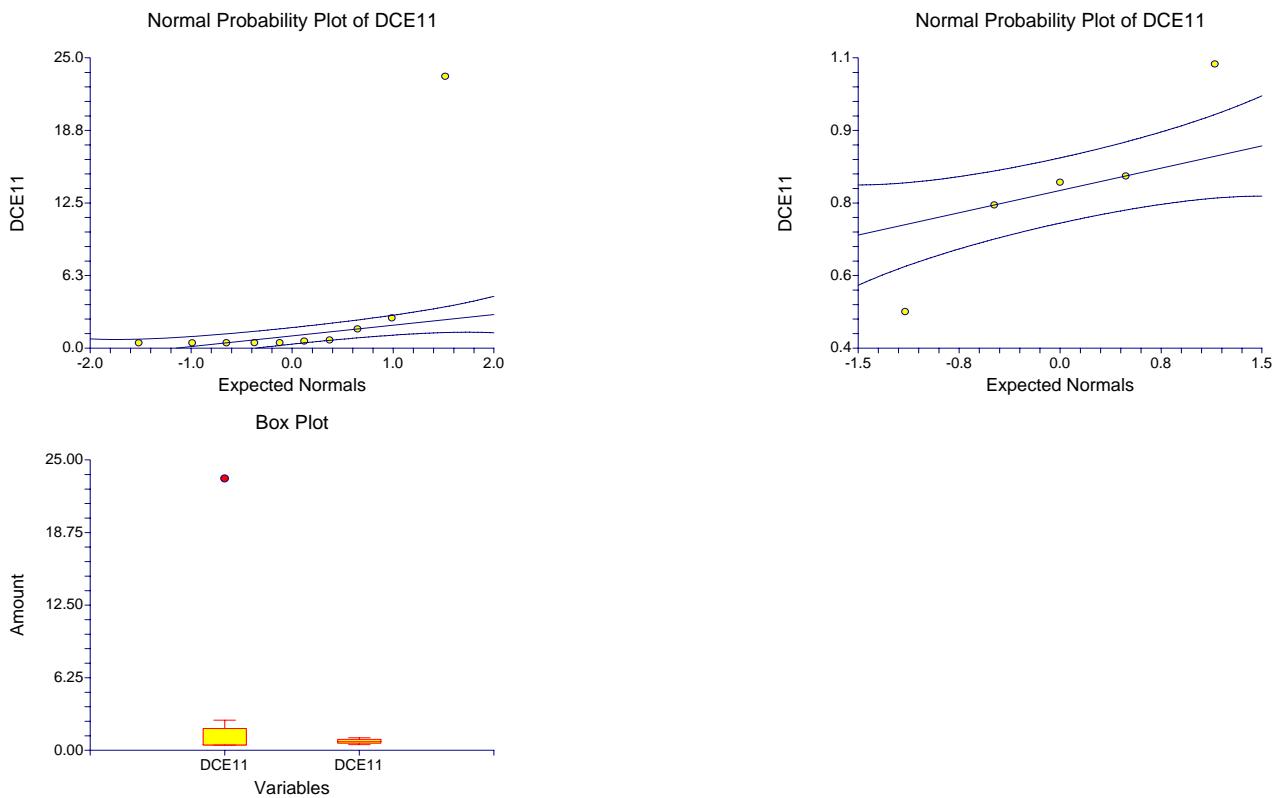
Histogram of DCE11



Histogram of DCE11



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ACE	10	6.993	6.651553	2.103406	2.234766	11.75123
ACE	5	87.5	89.06228	39.82986	-23.08543	198.0854

Note: T-alpha (ACE) = 2.2622, T-alpha (ACE) = 2.7764

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption Equal	13	-80.507	49.7119	27.22833	-139.3302	-21.68377
Unequal	4.02	-80.507	89.31032	39.88536	-191.0045	29.99051

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7704

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.9567	0.011127	Reject Ho	0.780266	0.502379
Difference < 0	-2.9567	0.005563	Reject Ho	0.875514	0.625615
Difference > 0	-2.9567	0.994437	Accept Ho	0.000004	0.000000
Difference: (ACE)-(ACE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.0185	0.113307	Accept Ho	0.341821	0.103498
Difference < 0	-2.0185	0.056653	Accept Ho	0.511054	0.179455
Difference > 0	-2.0185	0.943347	Accept Ho	0.000343	0.000050
Difference: (ACE)-(ACE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ACE)	2.4381	0.014763	Reject normality
Kurtosis Normality (ACE)	1.7226	0.084959	Cannot reject normality
Omnibus Normality (ACE)	8.9119	0.011609	Reject normality
Skewness Normality (ACE)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (ACE)			
Omnibus Normality (ACE)			
Variance-Ratio Equal-Variance Test	179.2840	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	10.4724	0.006500	Reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ACE	10	4.575	2.255	14.35
ACE	5	52.4		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ACE	5	60	80	8.164966
ACE	45	60	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

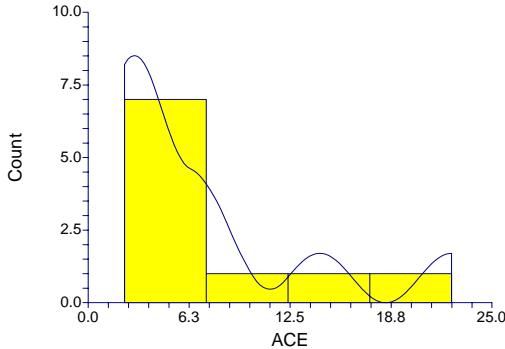
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.012654	Reject Ho	2.4495	0.014306	Reject Ho	2.3883	0.016929	Reject Ho
Diff<0	0.006327	Reject Ho	2.4495	0.007153	Reject Ho	2.3883	0.008464	Reject Ho
Diff>0	0.993673	Accept Ho	2.4495	0.992847	Accept Ho	2.5107	0.993976	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

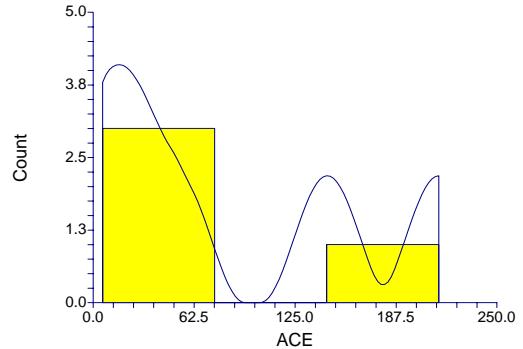
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.700000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

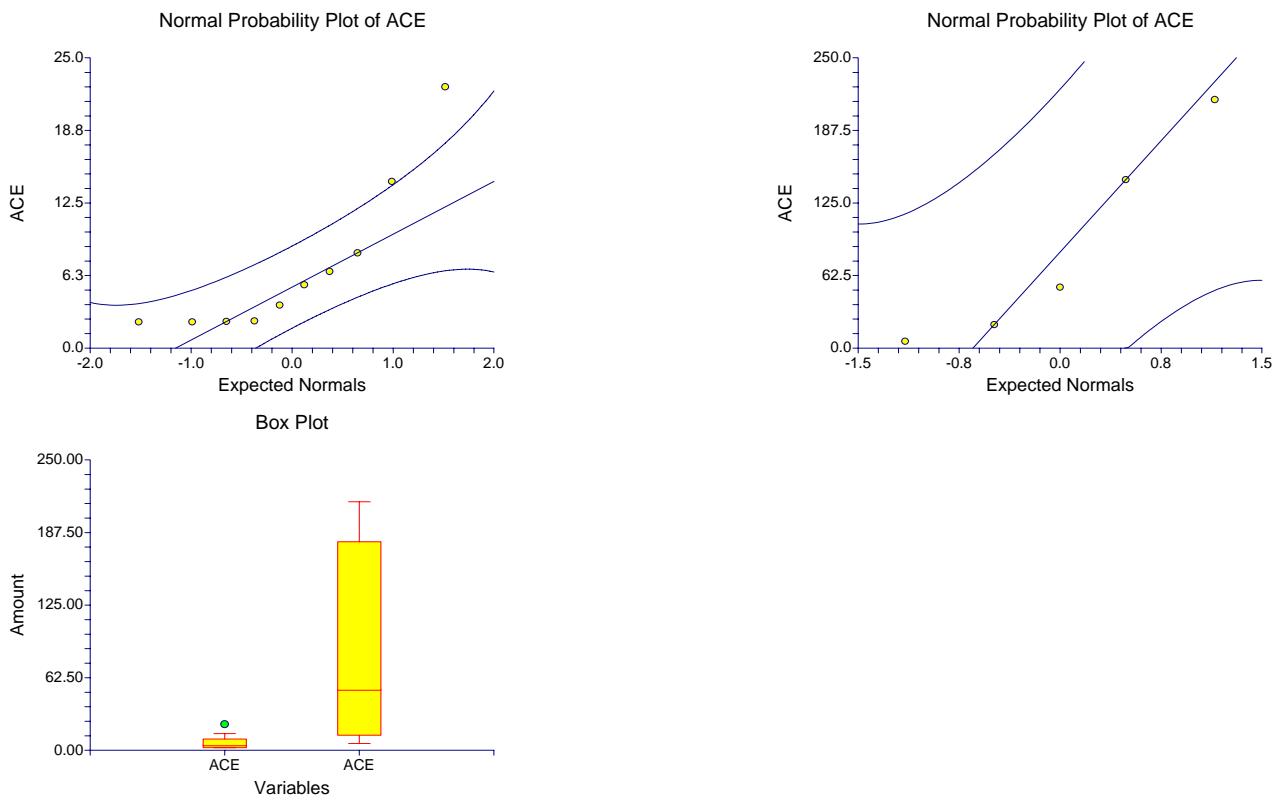
Histogram of ACE



Histogram of ACE



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CDS	10	2.798	0.5607049	0.1773105	2.396896	3.199104
CDS	5	4.691	2.033311	0.9093245	2.166311	7.21569

Note: T-alpha (CDS) = 2.2622, T-alpha (CDS) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-1.893	1.220559	0.6685276	-3.337266	-0.4487339
Unequal	4.31	-1.893	2.109205	0.9264502	-4.394479	0.6084789

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7001

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.8316	0.014147	Reject Ho	0.744738	0.459339
Difference < 0	-2.8316	0.007074	Reject Ho	0.849622	0.582848
Difference > 0	-2.8316	0.992926	Accept Ho	0.000007	0.000000
Difference: (CDS)-(CDS)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.0433	0.105527	Accept Ho	0.359298	0.113144
Difference < 0	-2.0433	0.052764	Accept Ho	0.528139	0.193044
Difference > 0	-2.0433	0.947236	Accept Ho	0.000301	0.000042
Difference: (CDS)-(CDS)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CDS)	0.3599	0.718896	Cannot reject normality
Kurtosis Normality (CDS)	-2.3645	0.018053	Reject normality
Omnibus Normality (CDS)	5.7205	0.057254	Cannot reject normality
Skewness Normality (CDS)	0.0000		
Kurtosis Normality (CDS)		1.000000	Cannot reject normality
Omnibus Normality (CDS)			
Variance-Ratio Equal-Variance Test	13.1504	0.001687	Reject equal variances
Modified-Levene Equal-Variance Test	3.9894	0.067159	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CDS	10	2.6625	2.255	3.455
CDS	5	4.1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CDS	5	60	80	8.164966
CDS	45	60	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

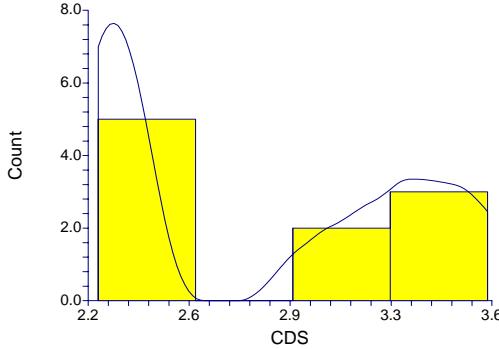
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision (5%)	Z-Value	Prob	Decision (5%)	Z-Value	Prob	Decision (5%)
Diff<>0	0.012654	Reject Ho	2.4495	0.014306	Reject Ho	2.3883	0.016929	Reject Ho
Diff<0	0.006327	Reject Ho	2.4495	0.007153	Reject Ho	2.3883	0.008464	Reject Ho
Diff>0	0.993673	Accept Ho	2.4495	0.992847	Accept Ho	2.5107	0.993976	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

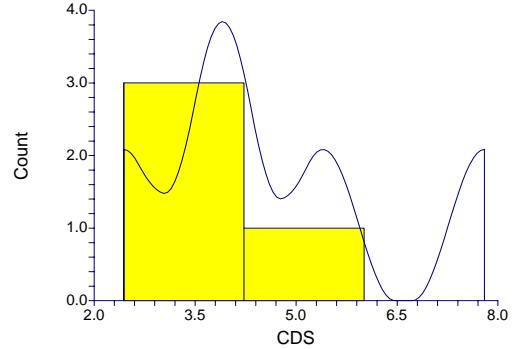
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob
	Criterion Value		Level	Level	Level
D(1)<>D(2)	0.800000	0.6698	.050	Reject Ho	0.0193
D(1)<D(2)	0.800000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

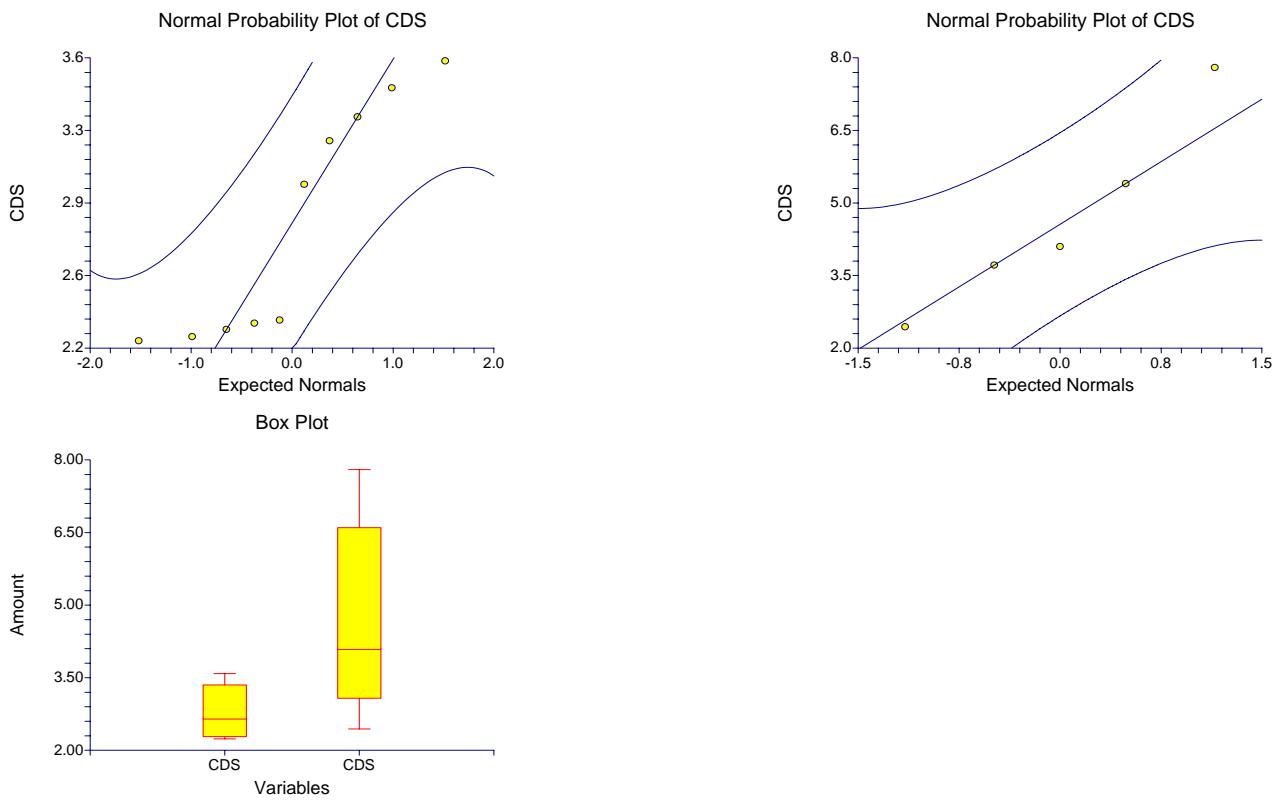
Histogram of CDS



Histogram of CDS



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
FC11	10	0.87485	0.9635859	0.3047126	0.1855422	1.564158
FC11	5	0.7576	0.220145	9.845182E-02	0.4842539	1.030946

Note: T-alpha (FC11) = 2.2622, T-alpha (FC11) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.11725	0.8109982	0.444202	-0.8423901	1.07689
Unequal	10.71	0.11725	0.9884137	0.3202226	-0.5898541	0.8243541

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2082

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2640	0.795951	Accept Ho	0.056907	0.012050
Difference < 0	0.2640	0.602024	Accept Ho	0.029012	0.005160
Difference > 0	0.2640	0.397976	Accept Ho	0.081607	0.018391
Difference: (FC11)-(FC11)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3662	0.721379	Accept Ho	0.062917	0.013791
Difference < 0	0.3662	0.639311	Accept Ho	0.023359	0.004017
Difference > 0	0.3662	0.360689	Accept Ho	0.096583	0.022583
Difference: (FC11)-(FC11)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (FC11)	3.9075	0.000093	Reject normality
Kurtosis Normality (FC11)	3.5140	0.000441	Reject normality
Omnibus Normality (FC11)	27.6169	0.000001	Reject normality
Skewness Normality (FC11)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (FC11)			
Omnibus Normality (FC11)			
Variance-Ratio Equal-Variance Test	19.1586	0.012063	Reject equal variances
Modified-Levene Equal-Variance Test	0.3282	0.576498	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
FC11	10	0.6275	0.451	0.715
FC11	5	0.745		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
FC11	13.5	68.5	80	8.157672
FC11	36.5	51.5	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

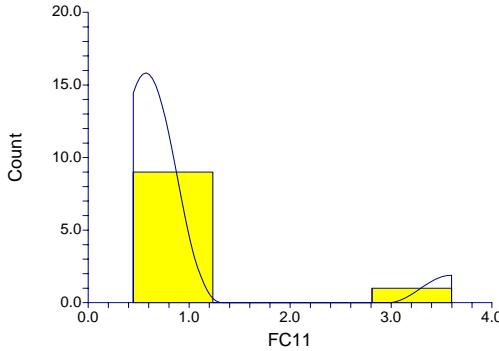
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.4097	0.158624	Accept Ho	1.3484	0.177522	Accept Ho
Diff<0			1.4097	0.079312	Accept Ho	1.3484	0.088761	Accept Ho
Diff>0			1.4097	0.920688	Accept Ho	1.4710	0.929356	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

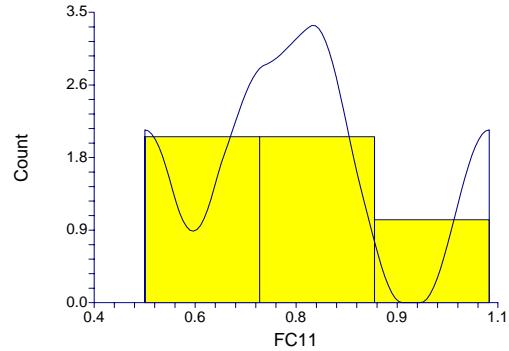
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.6698	.050	Accept Ho	0.3506
D(1)<D(2)	0.500000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

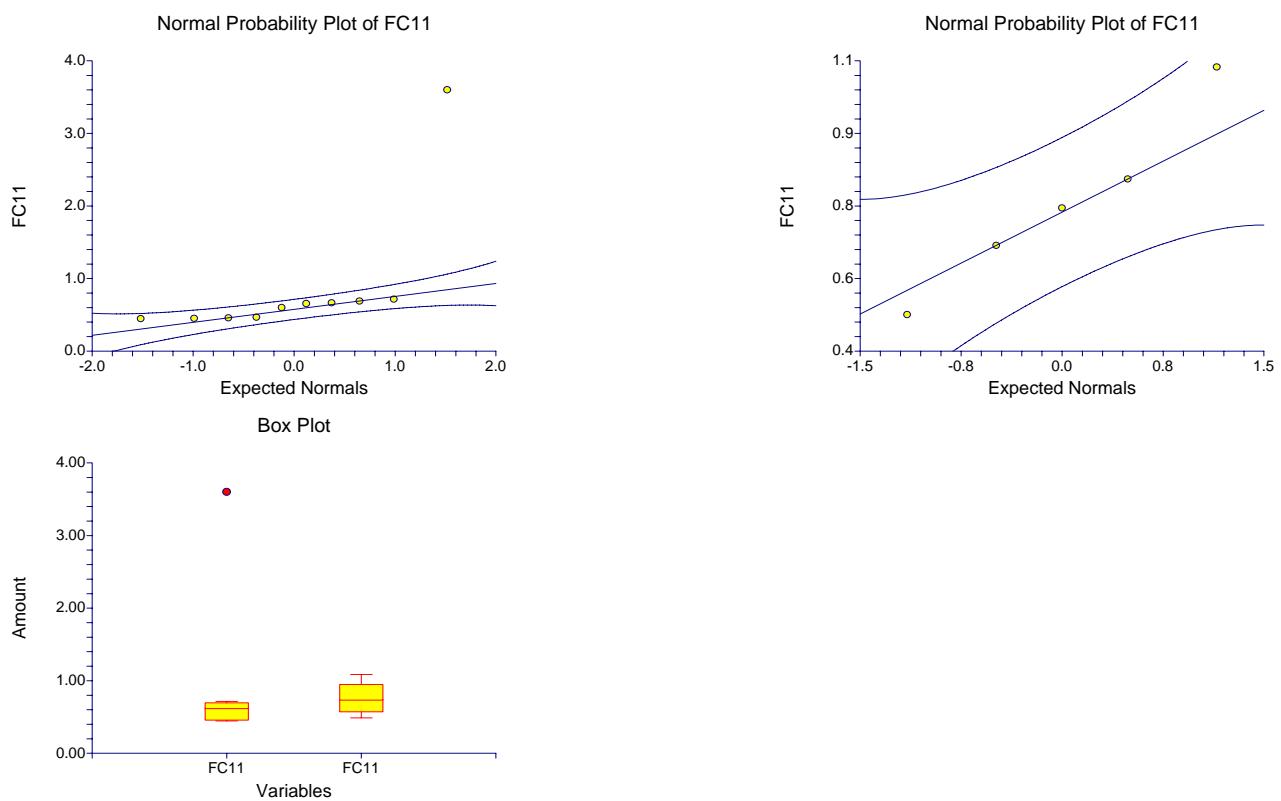
Histogram of FC11



Histogram of FC11



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MEK	10	3.0775	0.8786234	0.2778451	2.448971	3.706029
MEK	5	18.283	18.63215	8.332553	-4.851876	41.41788

Note: T-alpha (MEK) = 2.2622, T-alpha (MEK) = 2.7764

Confidence-Limits of Difference Section

Variance	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	13	-15.2055	10.36108	5.674999	-27.46559	-2.94541
Unequal	4.01	-15.2055	18.65286	8.337184	-38.33298	7.921986

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7740

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.6794	0.018923	Reject Ho	0.697767	0.407617
Difference < 0	-2.6794	0.009462	Reject Ho	0.813588	0.529482
Difference > 0	-2.6794	0.990538	Accept Ho	0.000014	0.000001
Difference: (MEK)-(MEK)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.8238	0.142086	Accept Ho	0.290096	0.083436
Difference < 0	-1.8238	0.071043	Accept Ho	0.447830	0.147281
Difference > 0	-1.8238	0.928957	Accept Ho	0.000635	0.000095
Difference: (MEK)-(MEK)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MEK)	1.7373	0.082342	Cannot reject normality
Kurtosis Normality (MEK)	1.3489	0.177363	Cannot reject normality
Omnibus Normality (MEK)	4.8376	0.089027	Cannot reject normality
Skewness Normality (MEK)	0.0000		
Kurtosis Normality (MEK)		1.000000	Cannot reject normality
Omnibus Normality (MEK)			
Variance-Ratio Equal-Variance Test	449.6976	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	10.7209	0.006039	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MEK	10	3.1275	2.255	3.585
MEK	5	11.3		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MEK	10	65	80	8.164966
MEK	40	55	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

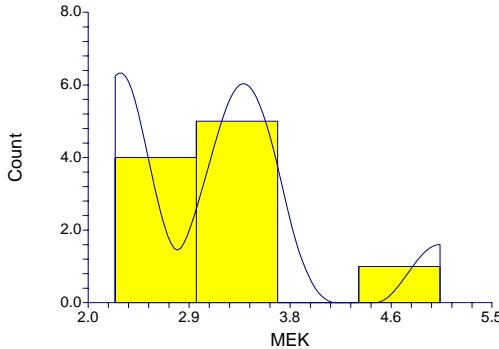
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.075258	Accept Ho	1.8371	0.066193	Accept Ho	1.7759	0.075753	Accept Ho
Diff<0	0.037629	Reject Ho	1.8371	0.033096	Reject Ho	1.7759	0.037876	Reject Ho
Diff>0	0.962371	Accept Ho	1.8371	0.966904	Accept Ho	1.8984	0.971175	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

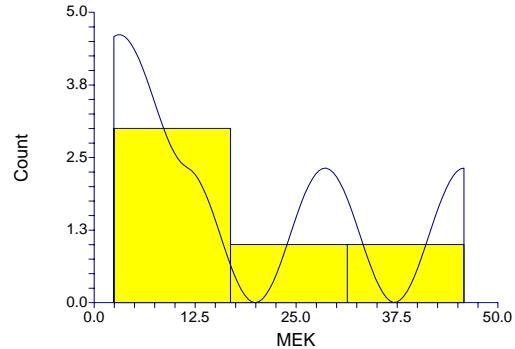
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.600000	0.6698	.050	Accept Ho	0.1658
D(1)<D(2)	0.600000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

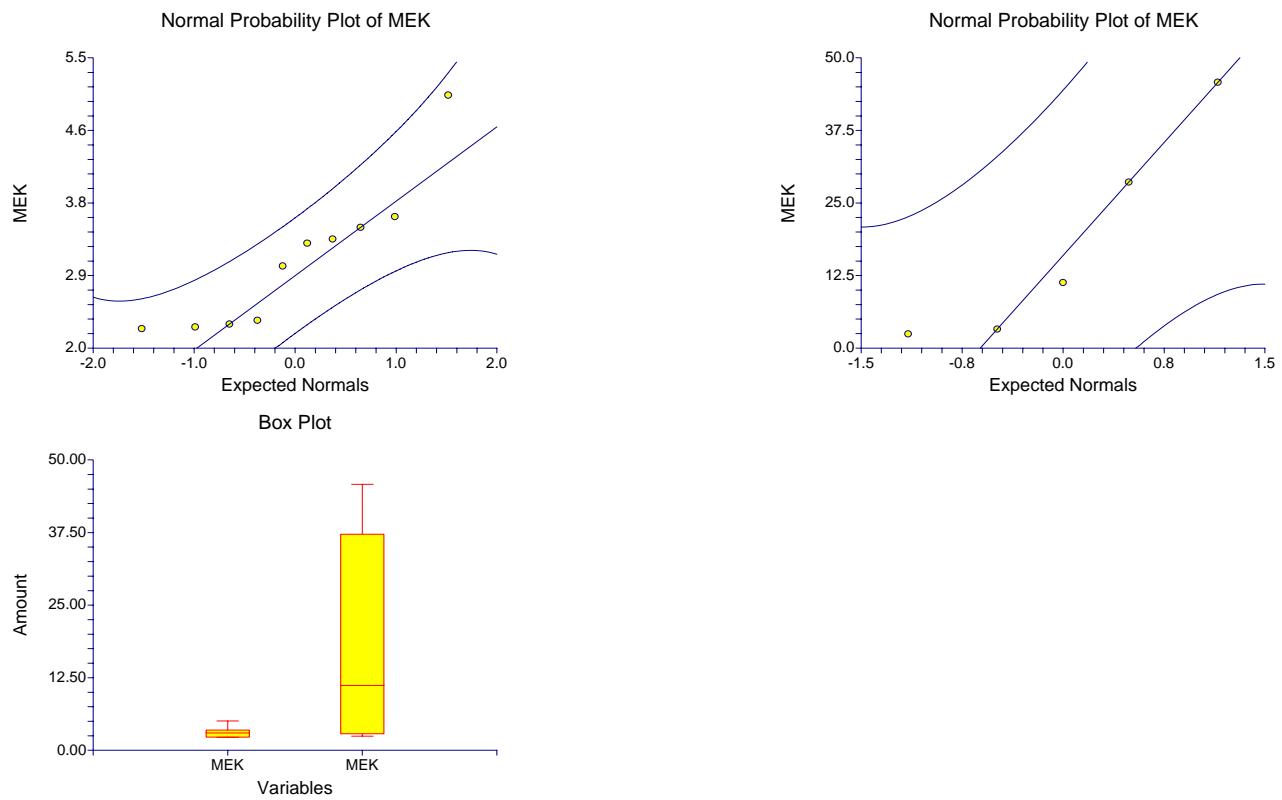
Histogram of MEK



Histogram of MEK



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AL	10	7862	4959.587	1568.359	4314.125	11409.88
AL	5	5774	2138.909	956.549	3118.194	8429.806

Note: T-alpha (AL) = 2.2622, T-alpha (AL) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	2088	4293.799	2351.811	-2992.778	7168.778
Unequal	12.92	2088	5401.151	1837.046	-1883.229	6059.229

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1617

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8878	0.390765	Accept Ho	0.130608	0.036773
Difference < 0	0.8878	0.804618	Accept Ho	0.006413	0.000873
Difference > 0	0.8878	0.195382	Accept Ho	0.211035	0.063414
Difference: (AL)-(AL)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1366	0.276347	Accept Ho	0.183656	0.057565
Difference < 0	1.1366	0.861827	Accept Ho	0.003216	0.000396
Difference > 0	1.1366	0.138173	Accept Ho	0.285167	0.096099
Difference: (AL)-(AL)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AL)	1.4072	0.159359	Cannot reject normality
Kurtosis Normality (AL)	-0.2925	0.769888	Cannot reject normality
Omnibus Normality (AL)	2.0659	0.355961	Cannot reject normality
Skewness Normality (AL)	0.0000		
Kurtosis Normality (AL)		1.000000	Cannot reject normality
Omnibus Normality (AL)			
Variance-Ratio Equal-Variance Test	5.3766	0.120361	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.1591	0.301229	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AL	10	5705	3390	15100
AL	5	7210		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AL	29	84	80	8.164966
AL	21	36	40	8.164966

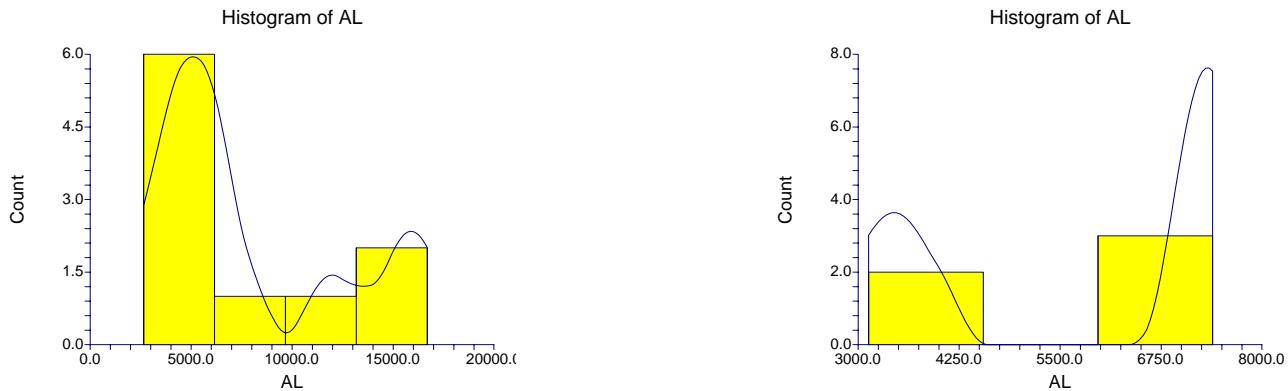
Number Sets of Ties = 0, Multiplicity Factor = 0

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.678655	Accept Ho	-0.4899	0.624206	Accept Ho	-0.4287	0.668170	Accept Ho
Diff<0	0.660673	Accept Ho	-0.4899	0.687897	Accept Ho	-0.5511	0.709229	Accept Ho
Diff>0	0.339327	Accept Ho	-0.4899	0.312103	Accept Ho	-0.4287	0.334085	Accept Ho

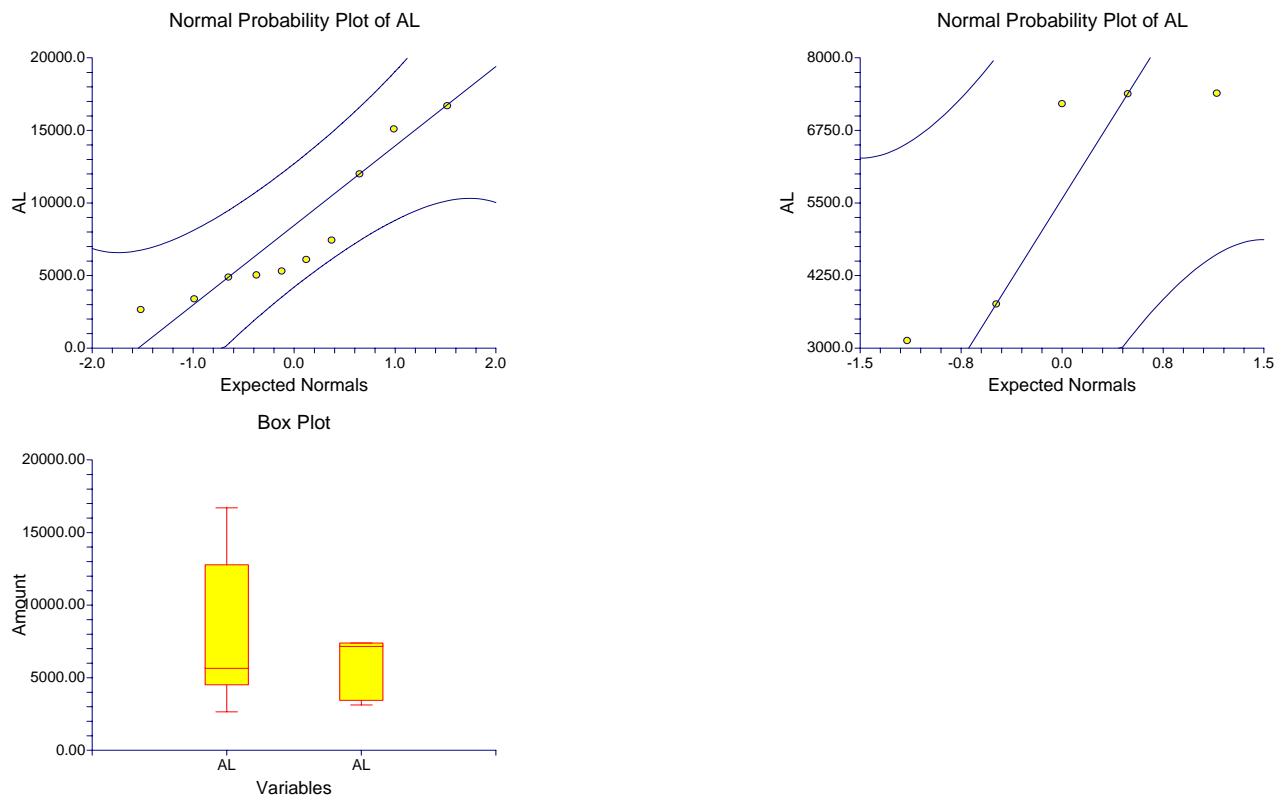
Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SB	10	0.0882	7.375342E-02	2.332288E-02	3.543998E-02	0.14096
SB	5	0.13329	9.340447E-02	4.177175E-02	1.731303E-02	0.249267

Note: T-alpha (SB) = 2.2622, T-alpha (SB) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.04509	8.031365E-02	0.0439896	-0.1401238	4.994376E-02
Unequal	6.60	-0.04509	0.1190124	4.784178E-02	-0.1596313	6.945126E-02

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.3942

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.0250	0.324052	Accept Ho	0.158242	0.047316
Difference < 0	-1.0250	0.162026	Accept Ho	0.250513	0.080227
Difference > 0	-1.0250	0.837974	Accept Ho	0.004409	0.000567
Difference: (SB)-(SB)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.9425	0.379165	Accept Ho	0.128245	0.033277
Difference < 0	-0.9425	0.189582	Accept Ho	0.212700	0.059492
Difference > 0	-0.9425	0.810418	Accept Ho	0.006217	0.000937
Difference: (SB)-(SB)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SB)	2.6040	0.009214	Reject normality
Kurtosis Normality (SB)	2.2231	0.026206	Reject normality
Omnibus Normality (SB)	11.7233	0.002847	Reject normality
Skewness Normality (SB)	0.0000		
Kurtosis Normality (SB)		1.000000	Cannot reject normality
Omnibus Normality (SB)			
Variance-Ratio Equal-Variance Test	1.6039	0.510050	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.4756	0.502526	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
SB	10	0.065	0.03	0.13
SB	5	0.17		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
SB	20	75	80	8.164966
SB	30	45	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

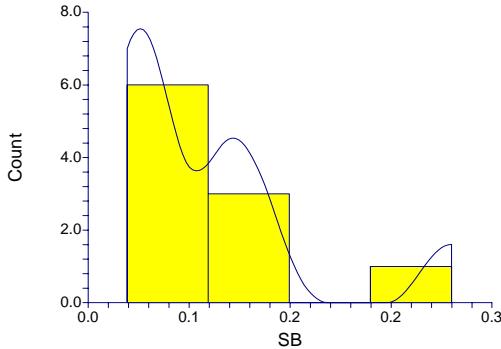
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.594073	Accept Ho	0.6124	0.540291	Accept Ho	0.5511	0.581541	Accept Ho
Diff<0	0.297036	Accept Ho	0.6124	0.270146	Accept Ho	0.5511	0.290771	Accept Ho
Diff>0	0.702964	Accept Ho	0.6124	0.729854	Accept Ho	0.6736	0.749720	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

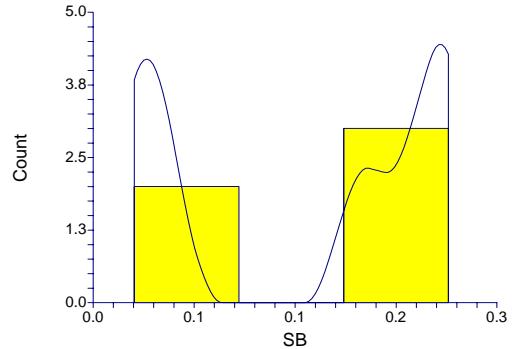
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.6698	.050	Accept Ho	0.3506
D(1)<D(2)	0.500000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

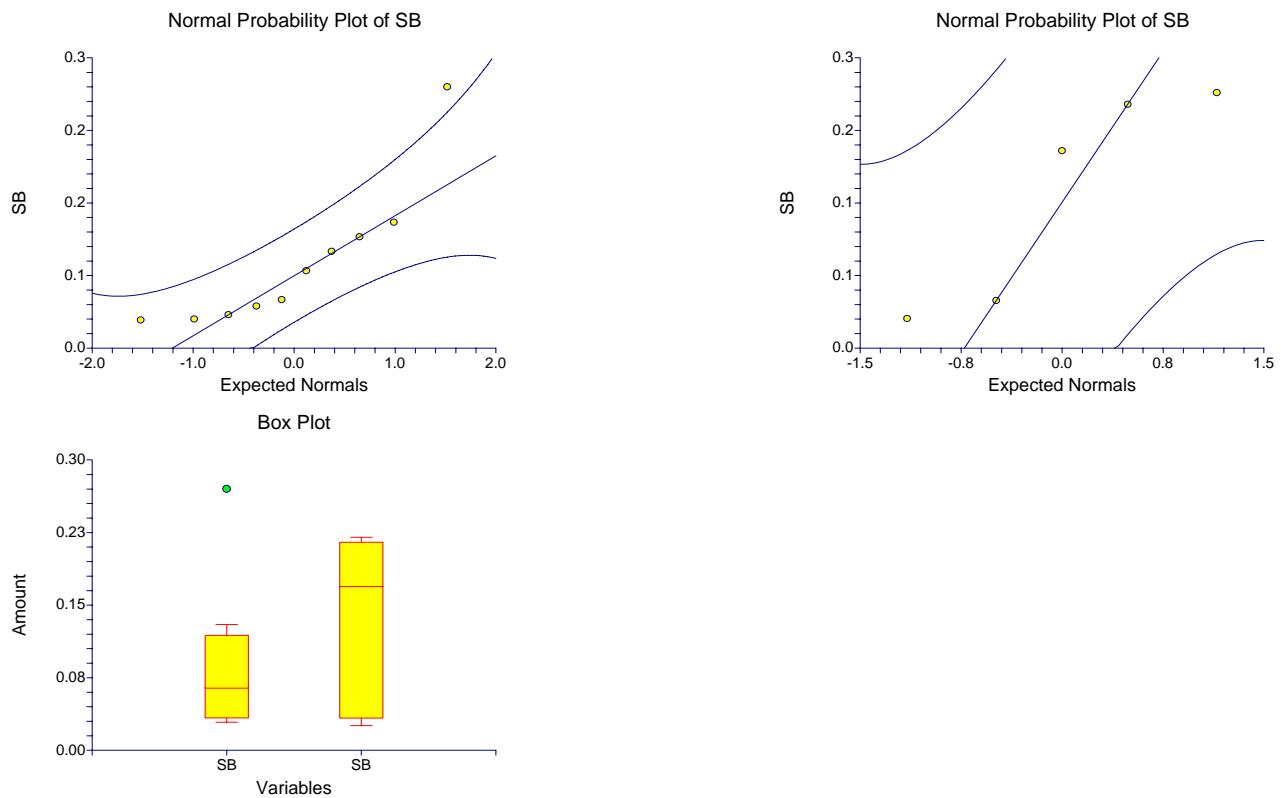
Histogram of SB



Histogram of SB



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AS	10	24.76	39.88531	12.61284	-3.772234	53.29223
AS	5	29.16	51.44728	23.00793	-34.72024	93.04024

Note: T-alpha (AS) = 2.2622, T-alpha (AS) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-4.4	43.76936	23.97346	-56.19152	47.39152
Unequal	6.50	-4.4	65.09732	26.2383	-67.41521	58.61521

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.4016

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.1835	0.857209	Accept Ho	0.053333	0.010983
Difference < 0	-0.1835	0.428604	Accept Ho	0.070693	0.015359
Difference > 0	-0.1835	0.571396	Accept Ho	0.034446	0.006348
Difference: (AS)-(AS)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.1677	0.871918	Accept Ho	0.052398	0.010644
Difference < 0	-0.1677	0.435959	Accept Ho	0.067624	0.014298
Difference > 0	-0.1677	0.564041	Accept Ho	0.036230	0.006866
Difference: (AS)-(AS)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AS)	2.5215	0.011685	Reject normality
Kurtosis Normality (AS)	1.2808	0.200272	Cannot reject normality
Omnibus Normality (AS)	7.9984	0.018330	Reject normality
Skewness Normality (AS)	0.0000		
Kurtosis Normality (AS)		1.000000	Cannot reject normality
Omnibus Normality (AS)			
Variance-Ratio Equal-Variance Test	1.6638	0.482505	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0303	0.864506	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AS	10	5.6	3.1	90.4
AS	5	8.5		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AS	25	80	80	8.164966
AS	25	40	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

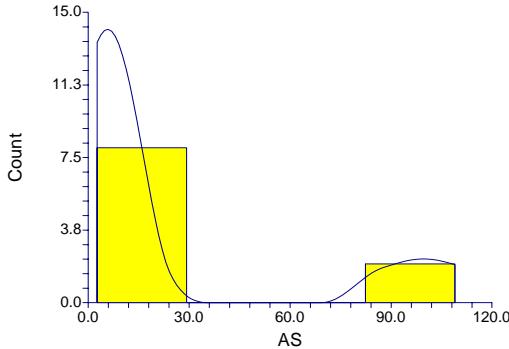
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Z-Value	Prob	Decision	(5%)
Diff<>0	1.046953	Accept Ho	0.0000	1.000000	Accept Ho	0.0612	1.000000	Accept Ho
Diff<0	0.476523	Accept Ho	0.0000	0.500000	Accept Ho	-0.0612	0.524415	Accept Ho
Diff>0	0.523477	Accept Ho	0.0000	0.500000	Accept Ho	0.0612	0.524415	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

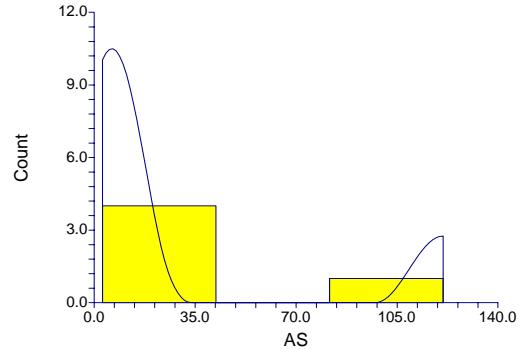
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

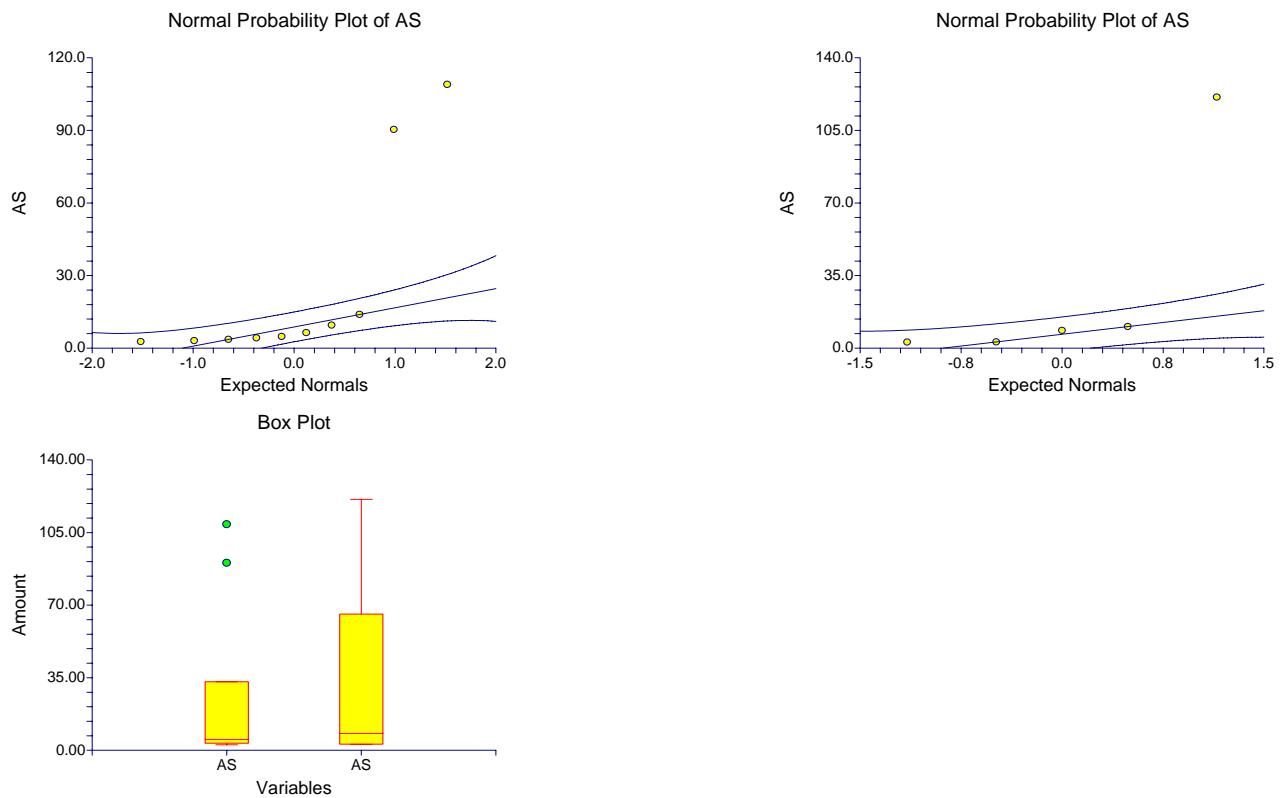
Histogram of AS



Histogram of AS



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BA	10	41.26	21.71007	6.865327	25.72955	56.79045
BA	5	41.28	22.03468	9.854207	13.92033	68.63966

Note: T-alpha (BA) = 2.2622, T-alpha (BA) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.02	21.81046	11.94608	-25.82794	25.78794
Unequal	7.99	-0.02	30.93306	12.00992	-27.72163	27.68163

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.3066

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0017	0.998690	Accept Ho	0.050000	0.010000
Difference < 0	-0.0017	0.499345	Accept Ho	0.050164	0.010040
Difference > 0	-0.0017	0.500655	Accept Ho	0.049836	0.009960
Difference: (BA)-(BA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0017	0.998712	Accept Ho	0.050000	0.010000
Difference < 0	-0.0017	0.499356	Accept Ho	0.050158	0.010038
Difference > 0	-0.0017	0.500644	Accept Ho	0.049842	0.009962
Difference: (BA)-(BA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BA)	1.2635	0.206395	Cannot reject normality
Kurtosis Normality (BA)	-0.0015	0.998770	Cannot reject normality
Omnibus Normality (BA)	1.5965	0.450108	Cannot reject normality
Skewness Normality (BA)	0.0000		
Kurtosis Normality (BA)		1.000000	Cannot reject normality
Omnibus Normality (BA)			
Variance-Ratio Equal-Variance Test	1.0301	0.884997	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0013	0.972295	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BA	10	35.45	19	69.5
BA	5	35		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BA	25	80	80	8.164966
BA	25	40	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

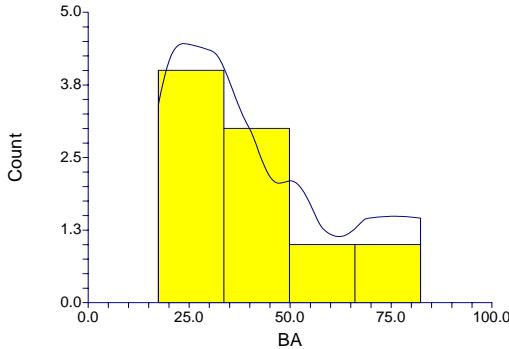
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	1.046953	Accept Ho	0.0000	1.000000	Accept Ho	0.0612	1.000000	Accept Ho
Diff<0	0.476523	Accept Ho	0.0000	0.500000	Accept Ho	-0.0612	0.524415	Accept Ho
Diff>0	0.523477	Accept Ho	0.0000	0.500000	Accept Ho	0.0612	0.524415	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

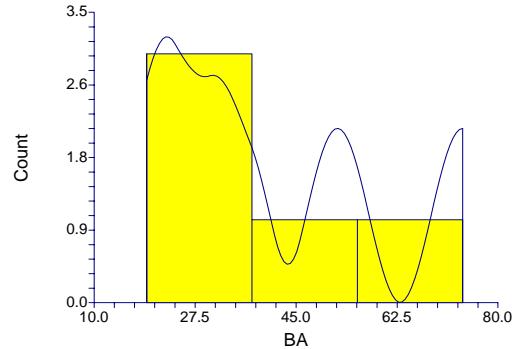
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.6698	.050	Accept Ho	0.9997
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

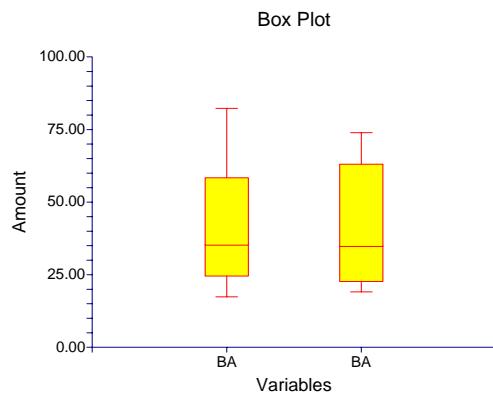
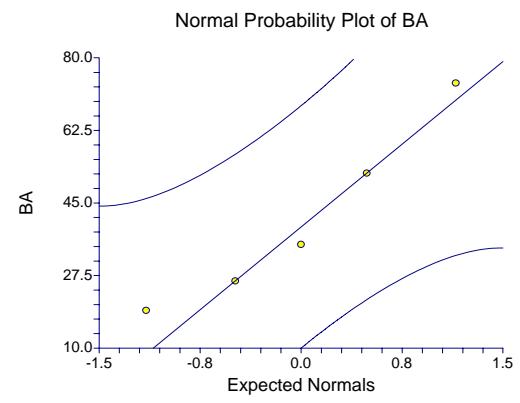
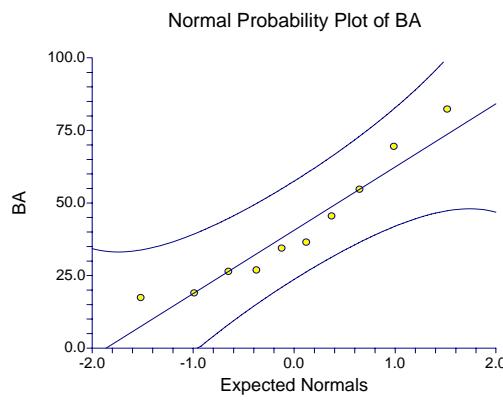
Histogram of BA



Histogram of BA



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
BE	10	5.3537	15.96948	5.049993	-6.070178	16.77758
BE	5	0.326	0.1758693	7.865113E-02	0.1076295	0.5443705

Note: T-alpha (BE) = 2.2622, T-alpha (BE) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	5.0277	13.28777	7.27801	-10.69549	20.75089
Unequal	9.00	5.0277	15.97045	5.050605	-6.396719	16.45212

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2620

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6908	0.501836	Accept Ho	0.098250	0.025296
Difference < 0	0.6908	0.749082	Accept Ho	0.010691	0.001581
Difference > 0	0.6908	0.250918	Accept Ho	0.161198	0.044209
Difference: (BE)-(BE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9955	0.345507	Accept Ho	0.145071	0.040583
Difference < 0	0.9955	0.827246	Accept Ho	0.005076	0.000706
Difference > 0	0.9955	0.172754	Accept Ho	0.234728	0.070664
Difference: (BE)-(BE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (BE)	3.9761	0.000070	Reject normality
Kurtosis Normality (BE)	3.5685	0.000359	Reject normality
Omnibus Normality (BE)	28.5439	0.000001	Reject normality
Skewness Normality (BE)	0.0000		
Kurtosis Normality (BE)		1.000000	Cannot reject normality
Omnibus Normality (BE)			
Variance-Ratio Equal-Variance Test	8245.2081	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	0.4817	0.499872	Cannot reject equal variances

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Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
BE	10	0.25	0.15	0.83
BE	5	0.33		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
BE	26	81	80	8.157672
BE	24	39	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

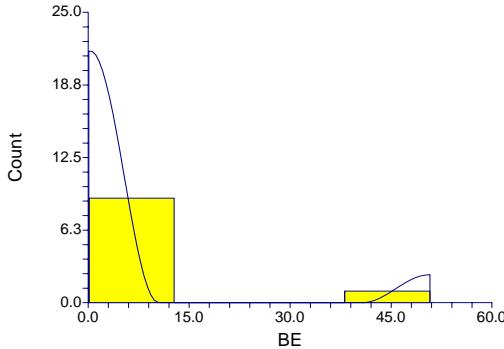
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.1226	0.902437	Accept Ho	-0.0613	0.951127	Accept Ho
Diff<0			-0.1226	0.548782	Accept Ho	-0.1839	0.572945	Accept Ho
Diff>0			-0.1226	0.451218	Accept Ho	-0.0613	0.475563	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

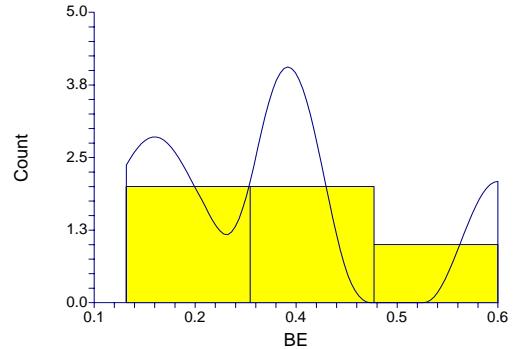
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.200000	0.6698	.050	Accept Ho	0.9997
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

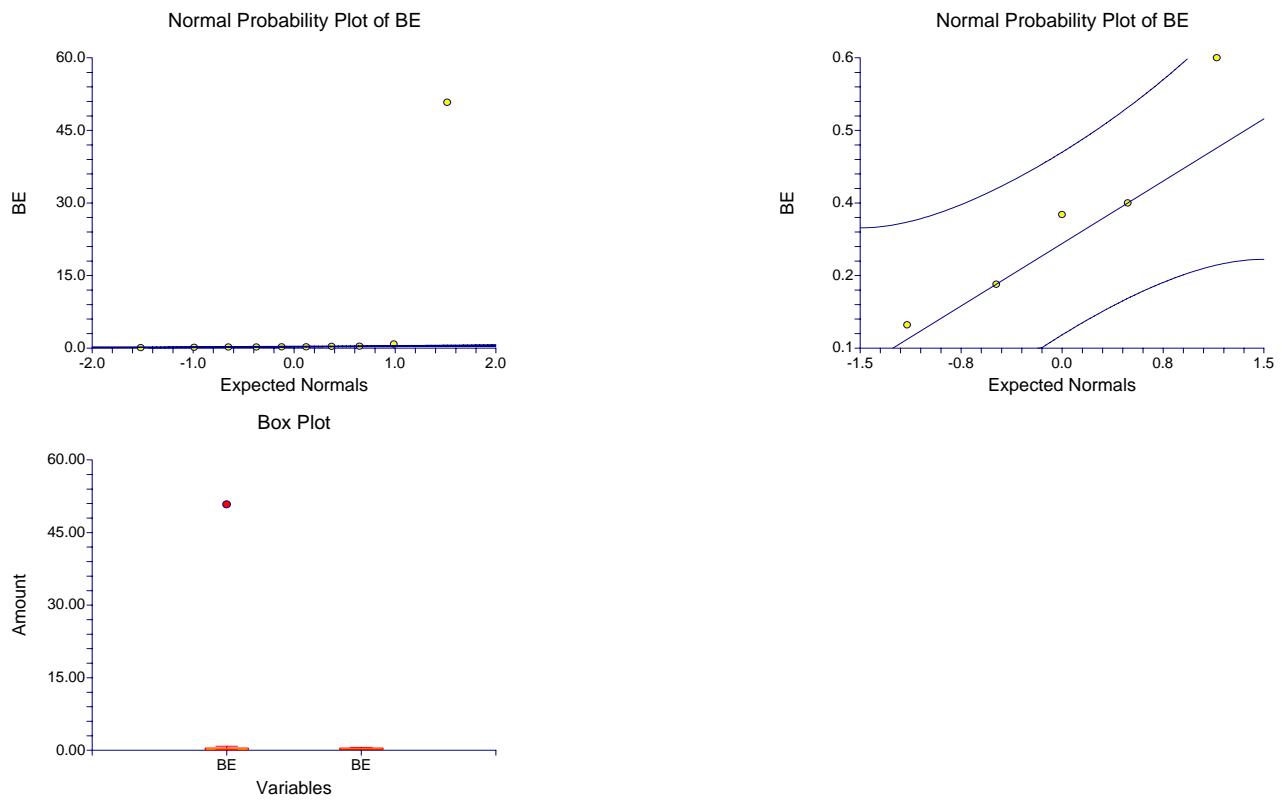
Histogram of BE



Histogram of BE



Two-Sample Test Report



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CD	10	0.507	0.7202322	0.2277574	-8.223089E-03	1.022223
CD	5	0.436	0.4168693	0.1864296	-8.161158E-02	0.9536116

Note: T-alpha (CD) = 2.2622, T-alpha (CD) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.071	0.6423353	0.3518215	-0.6890642	0.8310642
Unequal	12.49	0.071	0.8321745	0.2943288	-0.5675222	0.7095222

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1694

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2018	0.843191	Accept Ho	0.054031	0.011691
Difference < 0	0.2018	0.578404	Accept Ho	0.033143	0.006059
Difference > 0	0.2018	0.421596	Accept Ho	0.073069	0.016008
Difference: (CD)-(CD)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.2412	0.813295	Accept Ho	0.055730	0.011691
Difference < 0	0.2412	0.593353	Accept Ho	0.030504	0.005488
Difference > 0	0.2412	0.406647	Accept Ho	0.078329	0.017448
Difference: (CD)-(CD)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CD)	3.6861	0.000228	Reject normality
Kurtosis Normality (CD)	3.3172	0.000909	Reject normality
Omnibus Normality (CD)	24.5909	0.000005	Reject normality
Skewness Normality (CD)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (CD)			
Omnibus Normality (CD)			
Variance-Ratio Equal-Variance Test	2.9850	0.304474	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0296	0.866069	Cannot reject equal variances

Two-Sample Test Report

Page

2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CD	10	0.23	0.13	0.64
CD	5	0.23		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CD	26	81	80	8.164966
CD	24	39	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

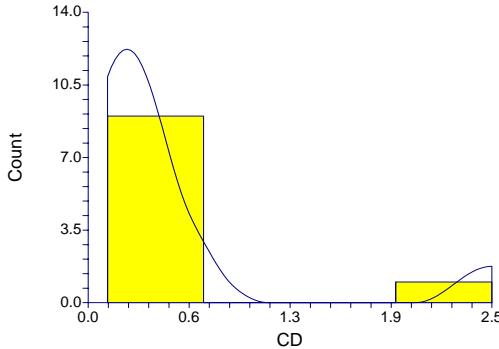
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob	Decision (5%)	Prob	Decision (5%)	Prob	Decision (5%)
Diff<>0	0.953047	Accept Ho	-0.1225	0.902523	Accept Ho	-0.0612
Diff<0	0.523477	Accept Ho	-0.1225	0.548738	Accept Ho	-0.1837
Diff>0	0.476523	Accept Ho	-0.1225	0.451262	Accept Ho	-0.0612

Kolmogorov-Smirnov Test For Different Distributions

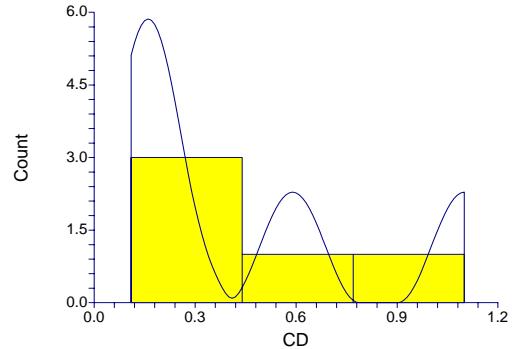
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob
	Criterion Value		Level		Level
D(1)<>D(2)	0.200000	0.6698	.050	Accept Ho	0.9997
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

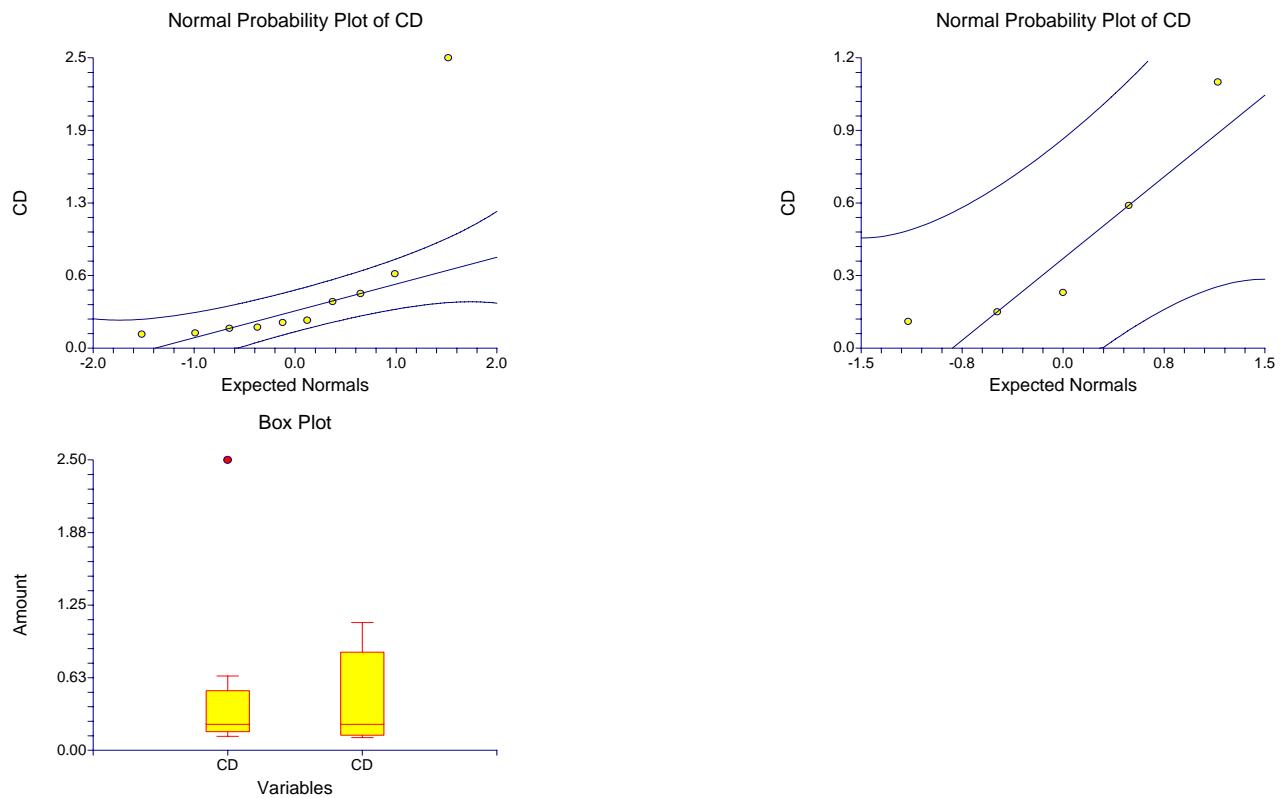
Histogram of CD



Histogram of CD



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CA	10	2147.4	1998.225	631.8942	717.9559	3576.844
CA	5	1268.8	483.0085	216.008	669.0657	1868.534

Note: T-alpha (CA) = 2.2622, T-alpha (CA) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	878.6	1684.073	922.4047	-1114.134	2871.334
Unequal	10.89	878.6	2055.772	667.7947	-592.9919	2350.192

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2037

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9525	0.358214	Accept Ho	0.143115	0.041461
Difference < 0	0.9525	0.820893	Accept Ho	0.005385	0.000714
Difference > 0	0.9525	0.179107	Accept Ho	0.229178	0.070966
Difference: (CA)-(CA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3157	0.215304	Accept Ho	0.224908	0.073884
Difference < 0	1.3157	0.892348	Accept Ho	0.001963	0.000234
Difference > 0	1.3157	0.107652	Accept Ho	0.340586	0.121564
Difference: (CA)-(CA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CA)	2.0965	0.036040	Reject normality
Kurtosis Normality (CA)	0.9379	0.348277	Cannot reject normality
Omnibus Normality (CA)	5.2749	0.071542	Cannot reject normality
Skewness Normality (CA)	0.0000		
Kurtosis Normality (CA)		1.000000	Cannot reject normality
Omnibus Normality (CA)			
Variance-Ratio Equal-Variance Test	17.1151	0.014941	Reject equal variances
Modified-Levene Equal-Variance Test	1.7215	0.212200	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CA	10	1290	685	4890
CA	5	1260		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CA	27	82	80	8.164966
CA	23	38	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

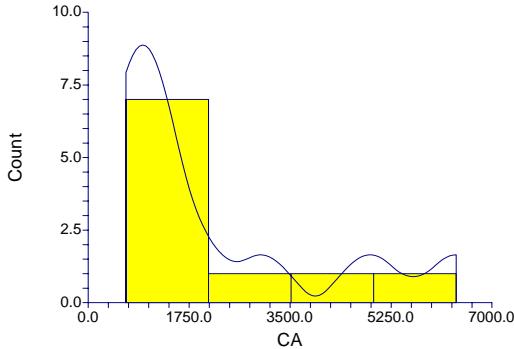
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.859141	Accept Ho	-0.2449	0.806496	Accept Ho	-0.1837	0.854240	Accept Ho
Diff<0	0.570430	Accept Ho	-0.2449	0.596752	Accept Ho	-0.3062	0.620269	Accept Ho
Diff>0	0.429570	Accept Ho	-0.2449	0.403248	Accept Ho	-0.1837	0.427120	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

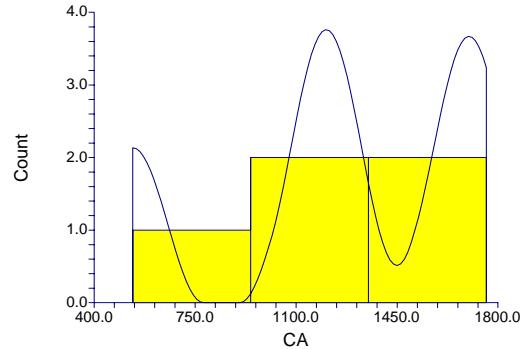
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

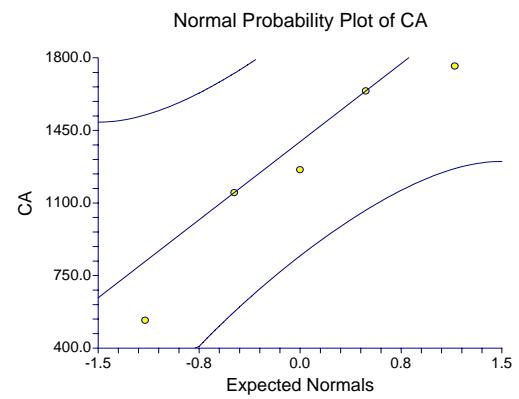
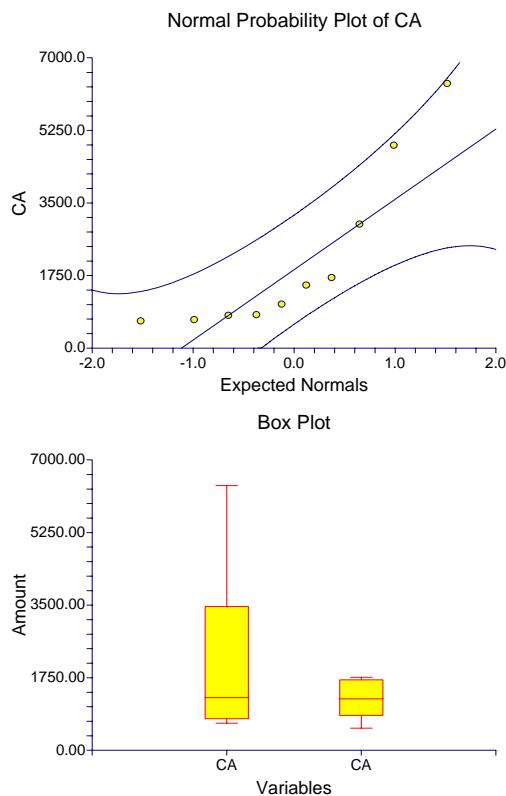
Histogram of CA



Histogram of CA



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CR	10	23.7	9.592127	3.033297	16.83821	30.56179
CR	5	135.78	194.1221	86.81404	-105.2544	376.8144

Note: T-alpha (CR) = 2.2622, T-alpha (CR) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-112.08	107.9749	59.14031	-239.8449	15.68488
Unequal	4.01	-112.08	194.3589	86.86702	-353.0299	128.8699

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7738

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.8952	0.080526	Accept Ho	0.418977	0.180346
Difference < 0	-1.8952	0.040263	Reject Ho	0.559811	0.266112
Difference > 0	-1.8952	0.959737	Accept Ho	0.000283	0.000026
Difference: (CR)-(CR)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.2902	0.266342	Accept Ho	0.170974	0.043274
Difference < 0	-1.2902	0.133171	Accept Ho	0.285295	0.079438
Difference > 0	-1.2902	0.866829	Accept Ho	0.002936	0.000469
Difference: (CR)-(CR)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CR)	1.0736	0.282995	Cannot reject normality
Kurtosis Normality (CR)	-0.3255	0.744825	Cannot reject normality
Omnibus Normality (CR)	1.2586	0.532970	Cannot reject normality
Skewness Normality (CR)	0.0000		
Kurtosis Normality (CR)		1.000000	Cannot reject normality
Omnibus Normality (CR)			
Variance-Ratio Equal-Variance Test	409.5625	0.000000	Reject equal variances
Modified-Levene Equal-Variance Test	3.4548	0.085849	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CR	10	19.7	16.2	37.1
CR	5	24.2		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CR	16	71	80	8.164966
CR	34	49	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

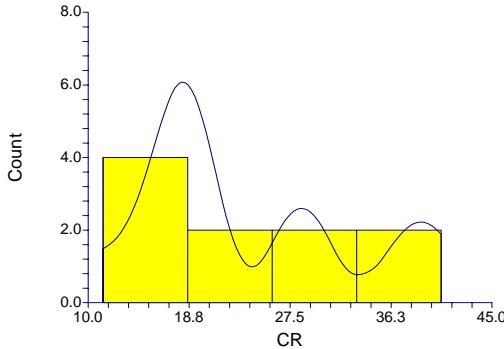
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.309690	Accept Ho	1.1023	0.270344	Accept Ho	1.0410
Diff<0	0.154845	Accept Ho	1.1023	0.135172	Accept Ho	1.0410
Diff>0	0.845155	Accept Ho	1.1023	0.864828	Accept Ho	1.1635

Kolmogorov-Smirnov Test For Different Distributions

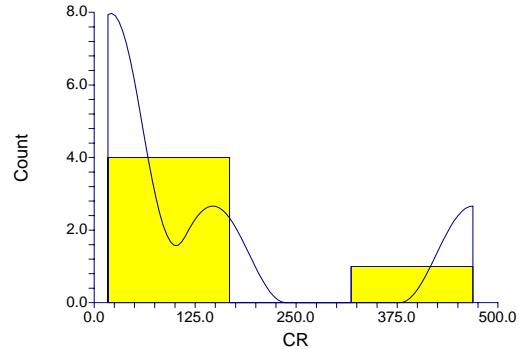
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

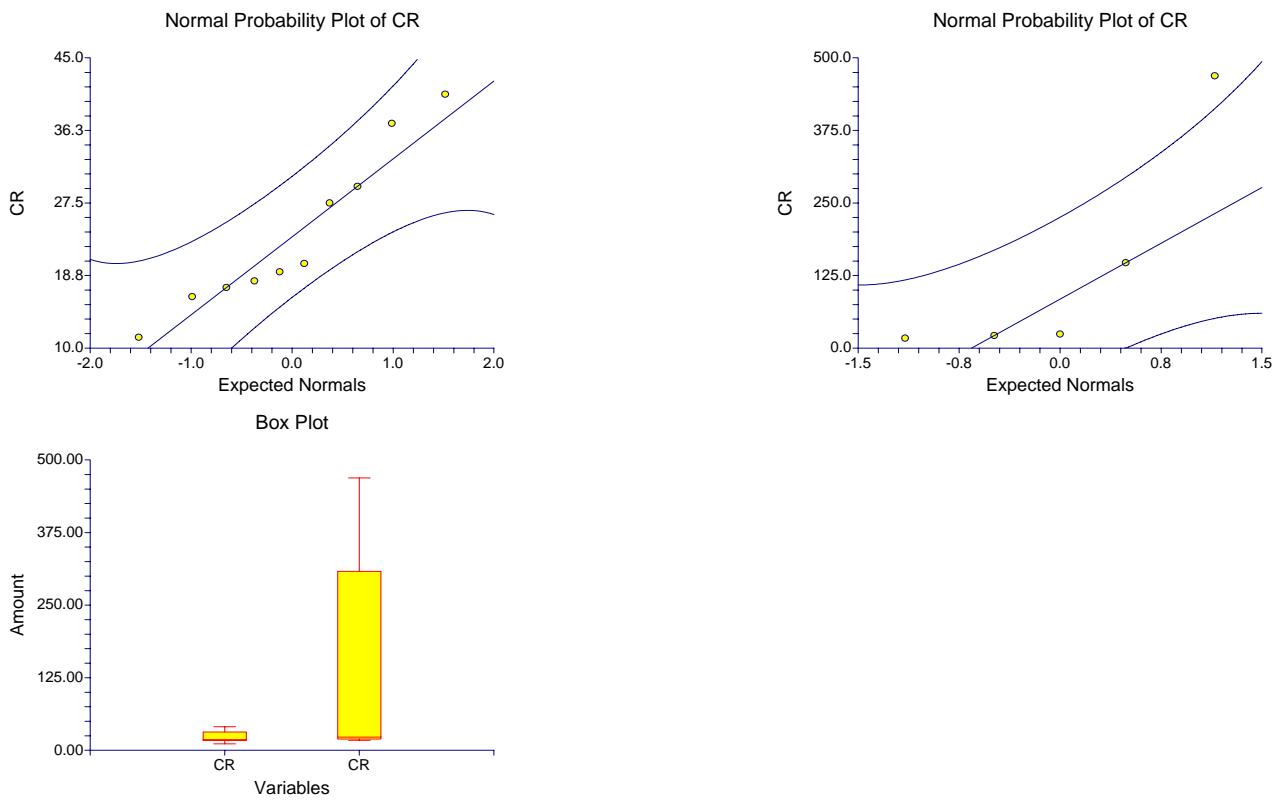
Histogram of CR



Histogram of CR



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CO	10	9.3	9.887928	3.126837	2.226603	16.3734
CO	5	9.62	5.831981	2.608141	2.378639	16.86136

Note: T-alpha (CO) = 2.2622, T-alpha (CO) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.32	8.840414	4.842094	-10.78071	10.14071
Unequal	12.39	-0.32	11.47968	4.071795	-9.160969	8.520968

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1713

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0661	0.948314	Accept Ho	0.050431	0.010127
Difference < 0	-0.0661	0.474157	Accept Ho	0.056811	0.011705
Difference > 0	-0.0661	0.525843	Accept Ho	0.043856	0.008515
Difference: (CO)-(CO)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.0786	0.938614	Accept Ho	0.050606	0.010177
Difference < 0	-0.0786	0.469307	Accept Ho	0.058156	0.012043
Difference > 0	-0.0786	0.530693	Accept Ho	0.042782	0.008265
Difference: (CO)-(CO)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CO)	2.4144	0.015763	Reject normality
Kurtosis Normality (CO)	1.2854	0.198652	Cannot reject normality
Omnibus Normality (CO)	7.4814	0.023737	Reject normality
Skewness Normality (CO)	0.0000		
Kurtosis Normality (CO)		1.000000	Cannot reject normality
Omnibus Normality (CO)			
Variance-Ratio Equal-Variance Test	2.8746	0.321620	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.1131	0.741965	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CO	10	5.35	2.4	24.4
CO	5	10		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CO	20	75	80	8.164966
CO	30	45	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

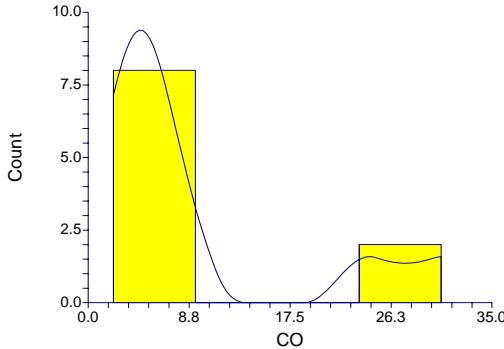
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.594073	Accept Ho	0.6124	0.540291	Accept Ho	0.5511	0.581541	Accept Ho
Diff<0	0.297036	Accept Ho	0.6124	0.270146	Accept Ho	0.5511	0.290771	Accept Ho
Diff>0	0.702964	Accept Ho	0.6124	0.729854	Accept Ho	0.6736	0.749720	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

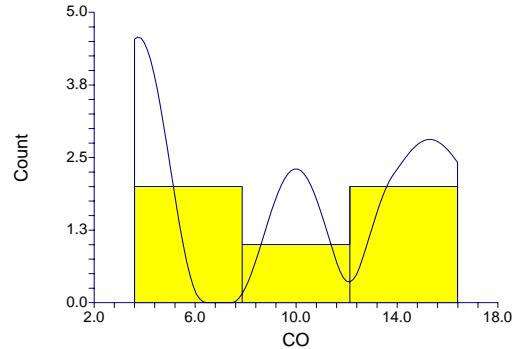
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

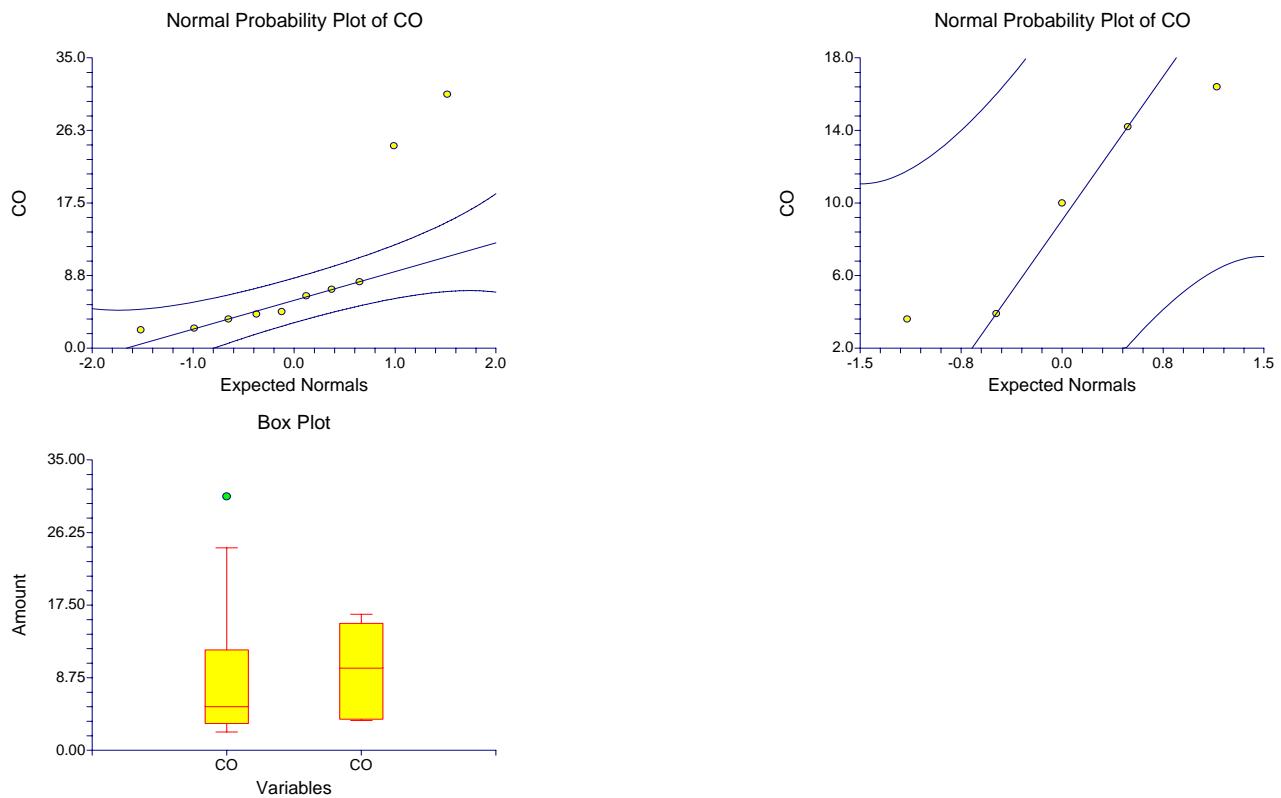
Histogram of CO



Histogram of CO



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
CU	10	25.02	12.58145	3.978604	16.01977	34.02023
CU	5	34.86	34.91114	15.61274	-8.487911	78.20791

Note: T-alpha (CU) = 2.2622, T-alpha (CU) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-9.84	22.01361	12.05735	-35.88832	16.20832
Unequal	4.53	-9.84	37.10904	16.1117	-52.58964	32.90964

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.6533

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.8161	0.429144	Accept Ho	0.117830	0.032128
Difference < 0	-0.8161	0.214572	Accept Ho	0.191932	0.055786
Difference > 0	-0.8161	0.785428	Accept Ho	0.007753	0.001088
Difference: (CU)-(CU)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.6107	0.570717	Accept Ho	0.078252	0.017306
Difference < 0	-0.6107	0.285358	Accept Ho	0.131257	0.030835
Difference > 0	-0.6107	0.714642	Accept Ho	0.014811	0.002585
Difference: (CU)-(CU)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (CU)	0.4635	0.643029	Cannot reject normality
Kurtosis Normality (CU)	-0.5797	0.562089	Cannot reject normality
Omnibus Normality (CU)	0.5509	0.759229	Cannot reject normality
Skewness Normality (CU)	0.0000		
Kurtosis Normality (CU)		1.000000	Cannot reject normality
Omnibus Normality (CU)			
Variance-Ratio Equal-Variance Test	7.6996	0.011149	Reject equal variances
Modified-Levene Equal-Variance Test	2.4190	0.143874	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
CU	10	25.6	9.3	37.6
CU	5	12		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
CU	26	81	80	8.164966
CU	24	39	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

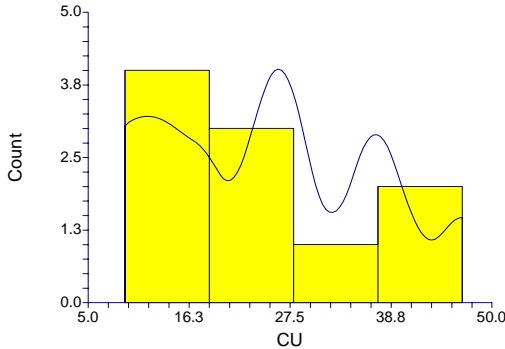
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.953047	Accept Ho	-0.1225	0.902523	Accept Ho	-0.0612
Diff<0	0.523477	Accept Ho	-0.1225	0.548738	Accept Ho	-0.1837
Diff>0	0.476523	Accept Ho	-0.1225	0.451262	Accept Ho	-0.0612

Kolmogorov-Smirnov Test For Different Distributions

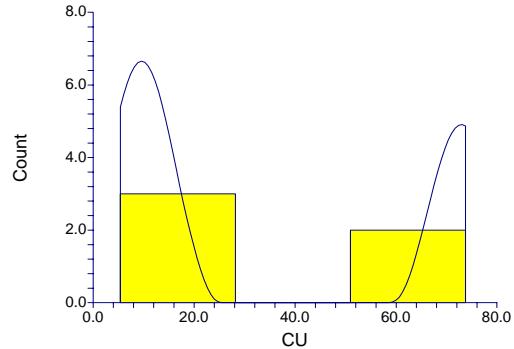
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section

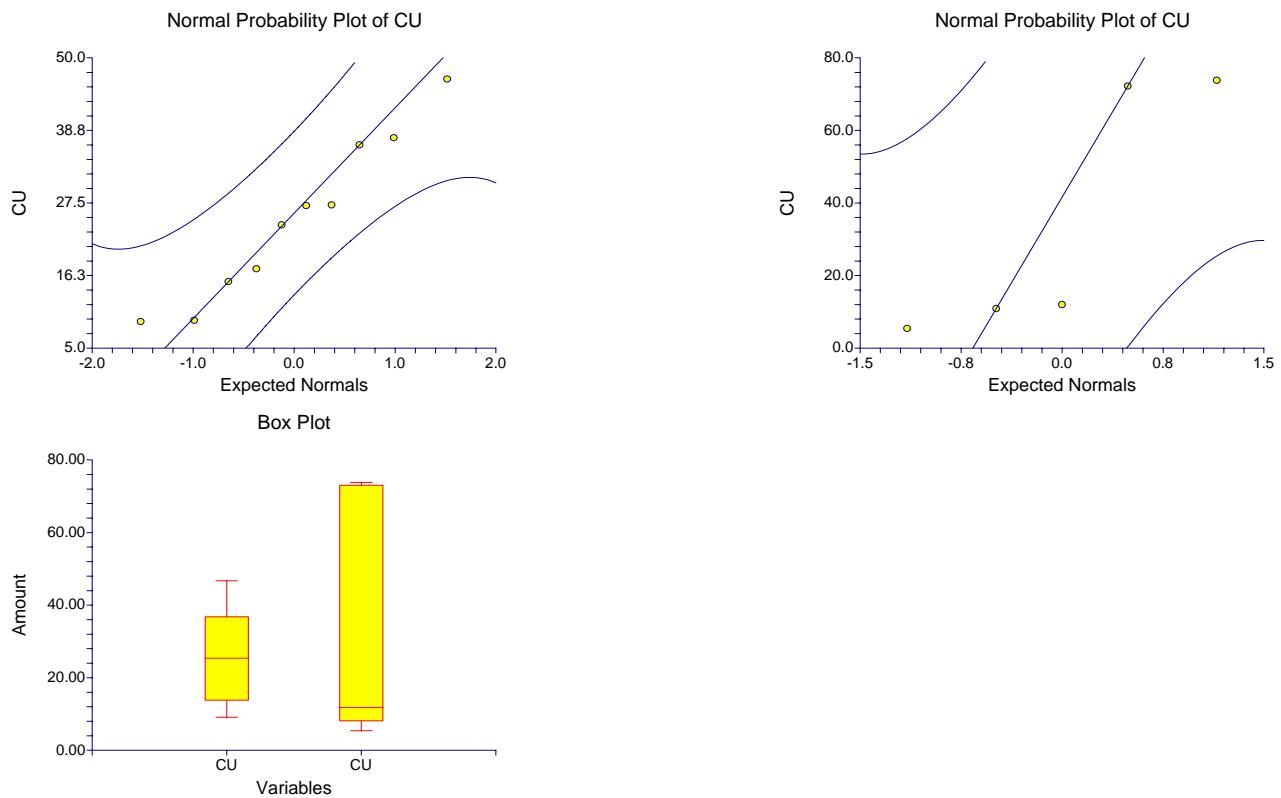
Histogram of CU



Histogram of CU



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
FE	10	19607	17921.02	5667.125	6787.072	32426.93
FE	5	29258	47465.29	21227.12	-29677.94	88193.95

Note: T-alpha (FE) = 2.2622, T-alpha (FE) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-9651	30258.23	16573.11	-45455.04	26153.03
Unequal	4.58	-9651	50735.76	21970.6	-67721.31	48419.32

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.6431

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.5823	0.570308	Accept Ho	0.084081	0.020573
Difference < 0	-0.5823	0.285154	Accept Ho	0.137332	0.035820
Difference > 0	-0.5823	0.714846	Accept Ho	0.013973	0.002165
Difference: (FE)-(FE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.4393	0.680409	Accept Ho	0.064619	0.013732
Difference < 0	-0.4393	0.340204	Accept Ho	0.102676	0.023025
Difference > 0	-0.4393	0.659796	Accept Ho	0.021370	0.003861
Difference: (FE)-(FE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (FE)	2.7456	0.006040	Reject normality
Kurtosis Normality (FE)	2.3088	0.020954	Reject normality
Omnibus Normality (FE)	12.8689	0.001605	Reject normality
Skewness Normality (FE)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (FE)			
Omnibus Normality (FE)			
Variance-Ratio Equal-Variance Test	7.0150	0.015108	Reject equal variances
Modified-Levene Equal-Variance Test	0.5827	0.458867	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
FE	10	12500	5860	31300
FE	5	9510		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
FE	30	85	80	8.164966
FE	20	35	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

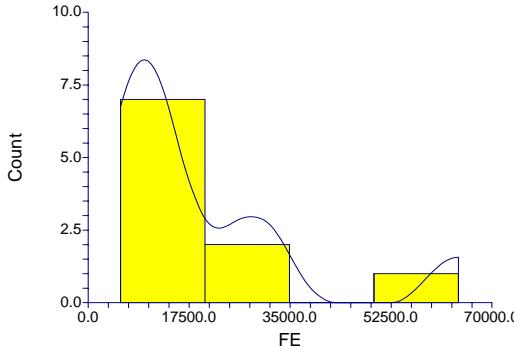
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Z-Value	Prob	Decision	(5%)
Diff<>0	0.594073	Accept Ho	-0.6124	0.540291	Accept Ho	-0.5511	0.581541	Accept Ho
Diff<0	0.702964	Accept Ho	-0.6124	0.729854	Accept Ho	-0.6736	0.749720	Accept Ho
Diff>0	0.297036	Accept Ho	-0.6124	0.270146	Accept Ho	-0.5511	0.290771	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

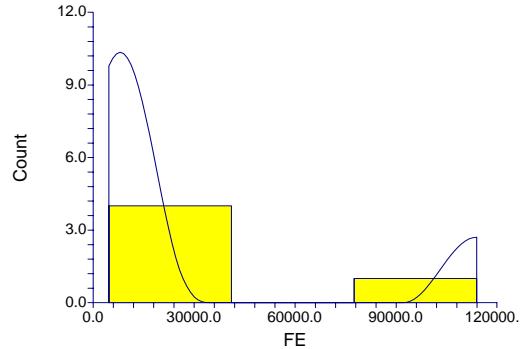
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

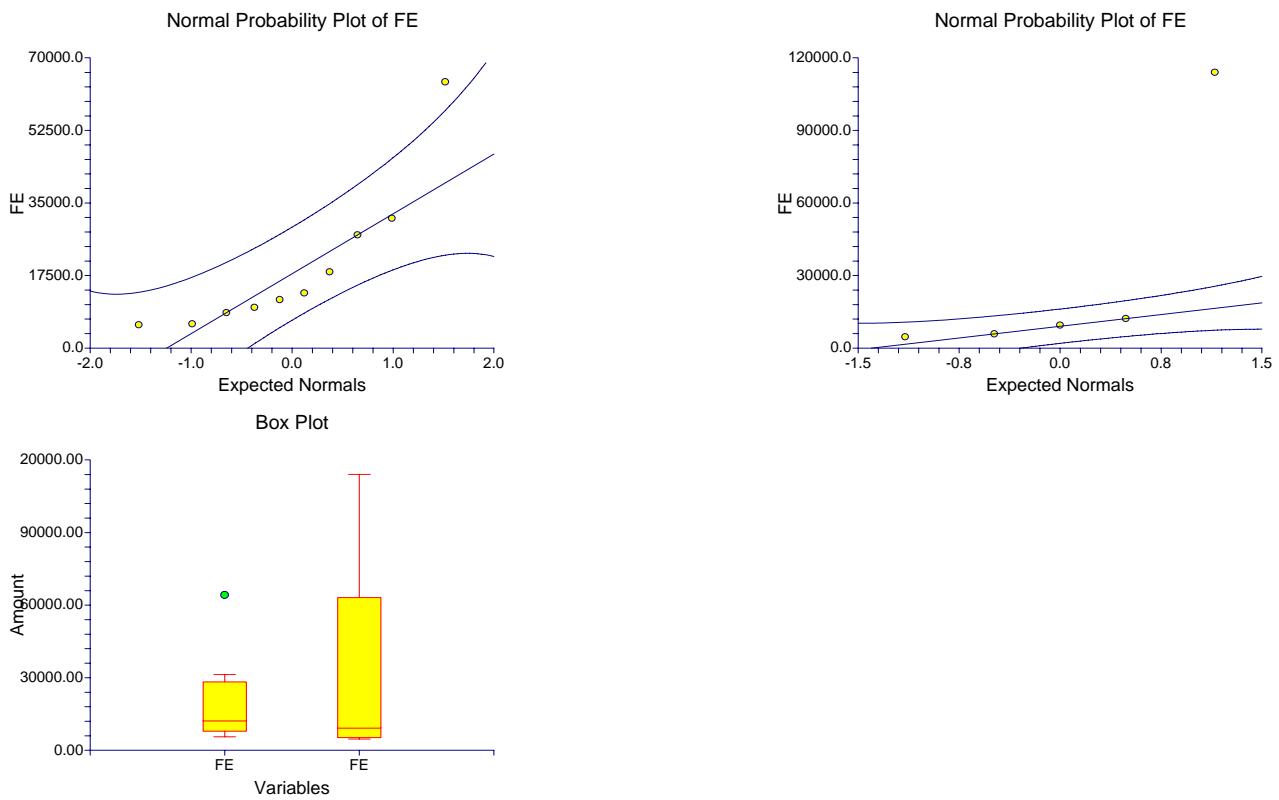
Histogram of FE



Histogram of FE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
PB	10	30.77	24.59978	7.779132	13.17238	48.36762
PB	5	94.72	134.1608	59.99855	-71.86269	261.3027

Note: T-alpha (PB) = 2.2622, T-alpha (PB) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-63.95	77.18253	42.27462	-155.2787	27.37876
Unequal	4.14	-63.95	136.3975	60.50076	-229.7847	101.8847

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7410

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.5127	0.154274	Accept Ho	0.288814	0.106169
Difference < 0	-1.5127	0.077137	Accept Ho	0.416373	0.166908
Difference > 0	-1.5127	0.922863	Accept Ho	0.001023	0.000108
Difference: (PB)-(PB)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.0570	0.348304	Accept Ho	0.132167	0.031975
Difference < 0	-1.0570	0.174152	Accept Ho	0.225217	0.059064
Difference > 0	-1.0570	0.825848	Accept Ho	0.005300	0.000869
Difference: (PB)-(PB)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (PB)	2.2421	0.024957	Reject normality
Kurtosis Normality (PB)	1.6607	0.096784	Cannot reject normality
Omnibus Normality (PB)	7.7846	0.020398	Reject normality
Skewness Normality (PB)	0.0000		
Kurtosis Normality (PB)		1.000000	Cannot reject normality
Omnibus Normality (PB)			
Variance-Ratio Equal-Variance Test	29.7433	0.000067	Reject equal variances
Modified-Levene Equal-Variance Test	2.5262	0.135984	Cannot reject equal variances

Two-Sample Test Report

Page

2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
PB	10	19.85	11.9	49.9
PB	5	29.2		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
PB	19	74	80	8.164966
PB	31	46	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

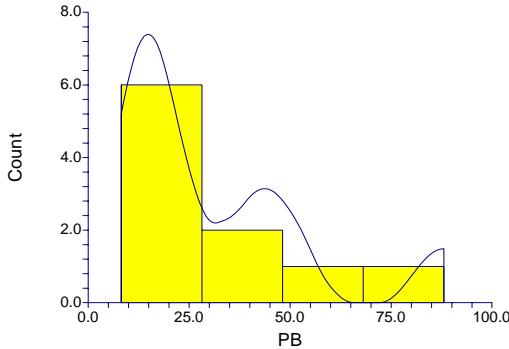
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Z-Value	Prob	Decision	(5%)
Diff<>0	0.513487	Accept Ho	0.7348	0.462433	Accept Ho	0.6736	0.500559	Accept Ho
Diff<0	0.256743	Accept Ho	0.7348	0.231216	Accept Ho	0.6736	0.250280	Accept Ho
Diff>0	0.743257	Accept Ho	0.7348	0.768784	Accept Ho	0.7961	0.787008	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

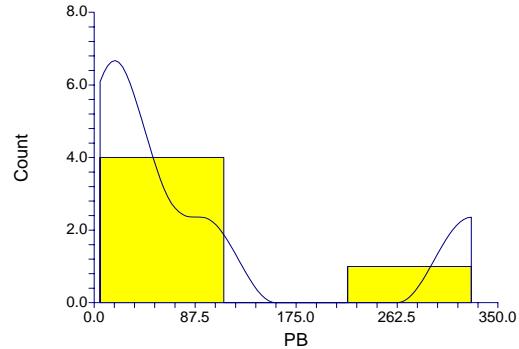
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

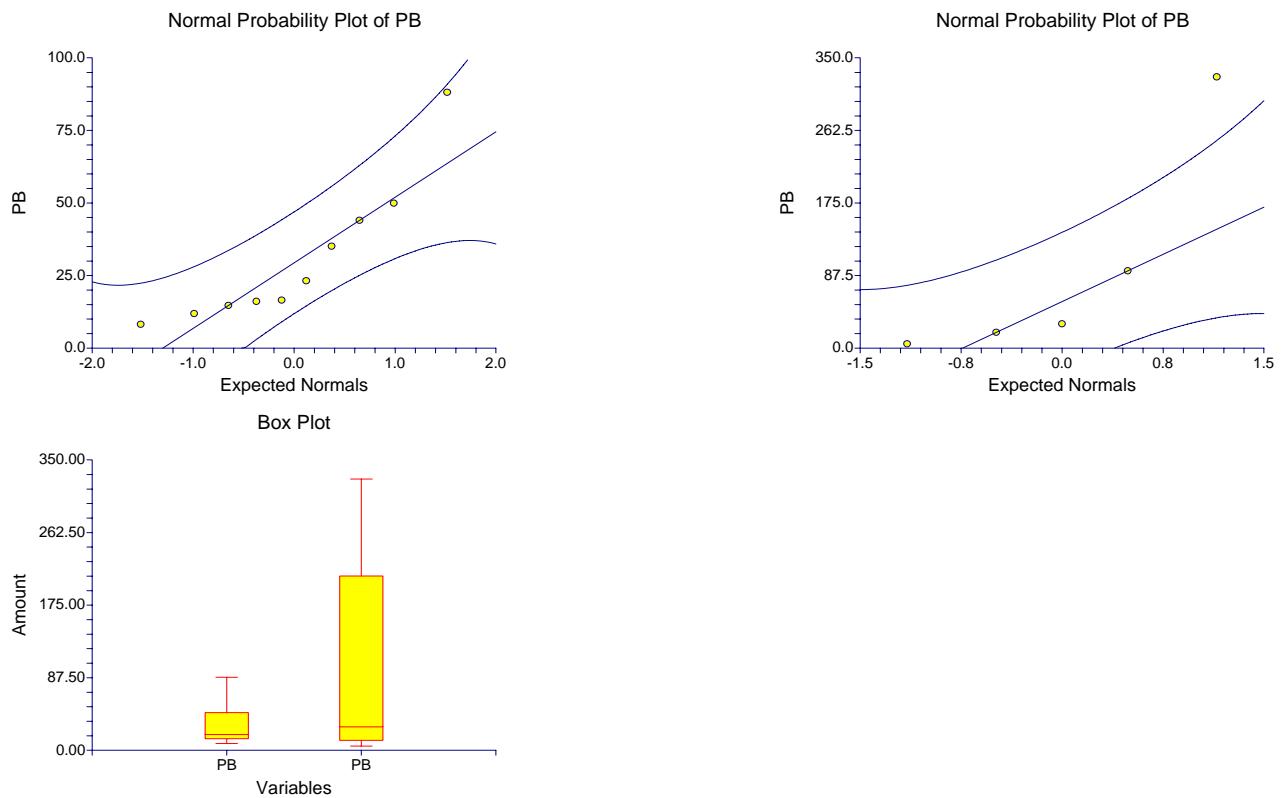
Histogram of PB



Histogram of PB



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MG	10	2969.4	1867.121	590.4355	1633.742	4305.058
MG	5	1776	661.6873	295.9155	954.4068	2597.593

Note: T-alpha (MG) = 2.2622, T-alpha (MG) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	1193.4	1596.308	874.3338	-695.4834	3082.283
Unequal	12.34	1193.4	1980.901	660.4393	-241.2175	2628.018

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1722

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3649	0.195435	Accept Ho	0.244270	0.084410
Difference < 0	1.3649	0.902283	Accept Ho	0.001627	0.000183
Difference > 0	1.3649	0.097717	Accept Ho	0.362777	0.135931
Difference: (MG)-(MG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.8070	0.095199	Accept Ho	0.384808	0.158147
Difference < 0	1.8070	0.952401	Accept Ho	0.000391	0.000038
Difference > 0	1.8070	0.047599	Reject Ho	0.524716	0.237946
Difference: (MG)-(MG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MG)	2.4718	0.013443	Reject normality
Kurtosis Normality (MG)	2.4087	0.016011	Reject normality
Omnibus Normality (MG)	11.9114	0.002591	Reject normality
Skewness Normality (MG)	0.0000		
Kurtosis Normality (MG)		1.000000	Cannot reject normality
Omnibus Normality (MG)			
Variance-Ratio Equal-Variance Test	7.9623	0.061056	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.7594	0.399314	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MG	10	2865	952	3650
MG	5	1970		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MG	37	92	80	8.164966
MG	13	28	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

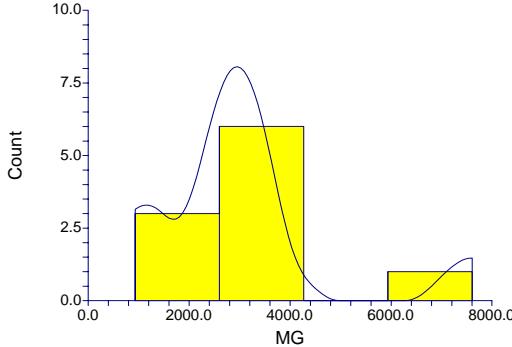
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision (5%)	Z-Value	Prob	Decision (5%)	Z-Value	Level	Decision (5%)
Diff<>0	0.164502	Accept Ho	-1.4697	0.141645	Accept Ho	-1.4085	0.158996	Accept Ho
Diff<0	0.917749	Accept Ho	-1.4697	0.929178	Accept Ho	-1.5309	0.937107	Accept Ho
Diff>0	0.082251	Accept Ho	-1.4697	0.070822	Accept Ho	-1.4085	0.079498	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

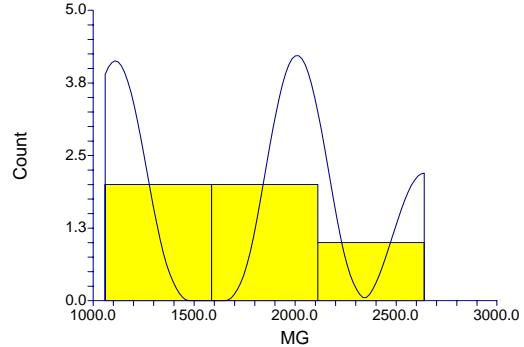
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha	Decision (Test Alpha)	Prob
	Criterion Value		Level	Level	Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.700000	0.6698	.025	Reject Ho	

Plots Section

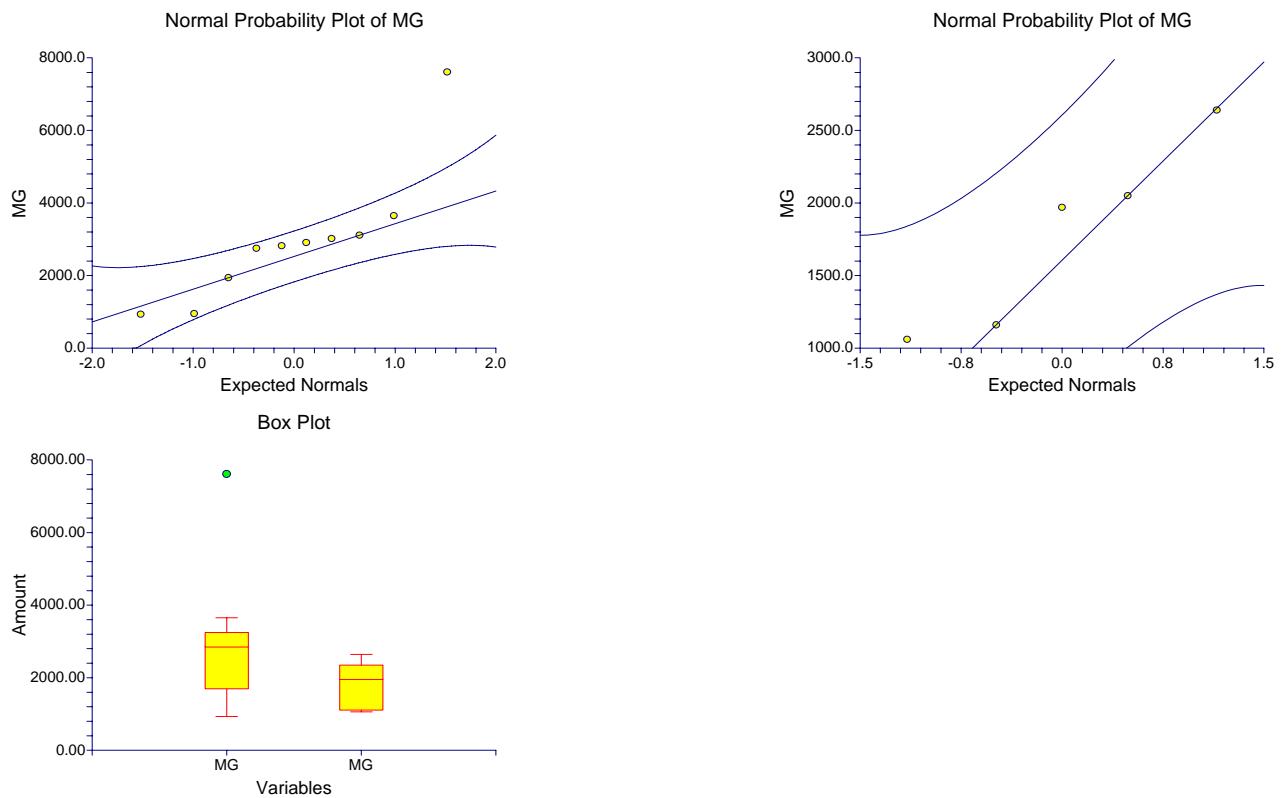
Histogram of MG



Histogram of MG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MN	10	489.1	892.0048	282.0767	-149.0018	1127.202
MN	5	262.08	179.977	80.48817	38.609	485.551

Note: T-alpha (MN) = 2.2622, T-alpha (MN) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	227.02	748.8771	410.1769	-659.1133	1113.153
Unequal	10.37	227.02	909.9803	293.3353	-423.4202	877.4601

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2174

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5535	0.589335	Accept Ho	0.080739	0.019487
Difference < 0	0.5535	0.705332	Accept Ho	0.014980	0.002349
Difference > 0	0.5535	0.294668	Accept Ho	0.131411	0.033822
Difference: (MN)-(MN)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7739	0.456255	Accept Ho	0.108510	0.028311
Difference < 0	0.7739	0.771873	Accept Ho	0.008870	0.001304
Difference > 0	0.7739	0.228127	Accept Ho	0.178607	0.049762
Difference: (MN)-(MN)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MN)	3.9006	0.000096	Reject normality
Kurtosis Normality (MN)	3.5075	0.000452	Reject normality
Omnibus Normality (MN)	27.5166	0.000001	Reject normality
Skewness Normality (MN)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (MN)			
Omnibus Normality (MN)			
Variance-Ratio Equal-Variance Test	24.5641	0.007498	Reject equal variances
Modified-Levene Equal-Variance Test	0.4192	0.528600	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MN	10	206.5	93	409
MN	5	230		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MN	24	79	80	8.164966
MN	26	41	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

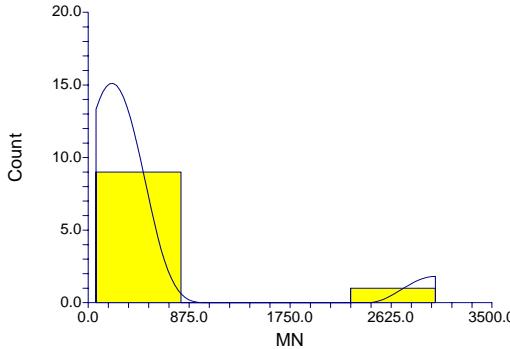
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.953047	Accept Ho	0.1225	0.902523	Accept Ho	0.0612	0.951170	Accept Ho
Diff<0	0.476523	Accept Ho	0.1225	0.451262	Accept Ho	0.0612	0.475585	Accept Ho
Diff>0	0.523477	Accept Ho	0.1225	0.548738	Accept Ho	0.1837	0.572880	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

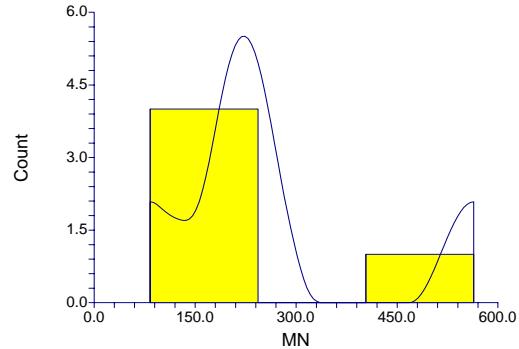
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

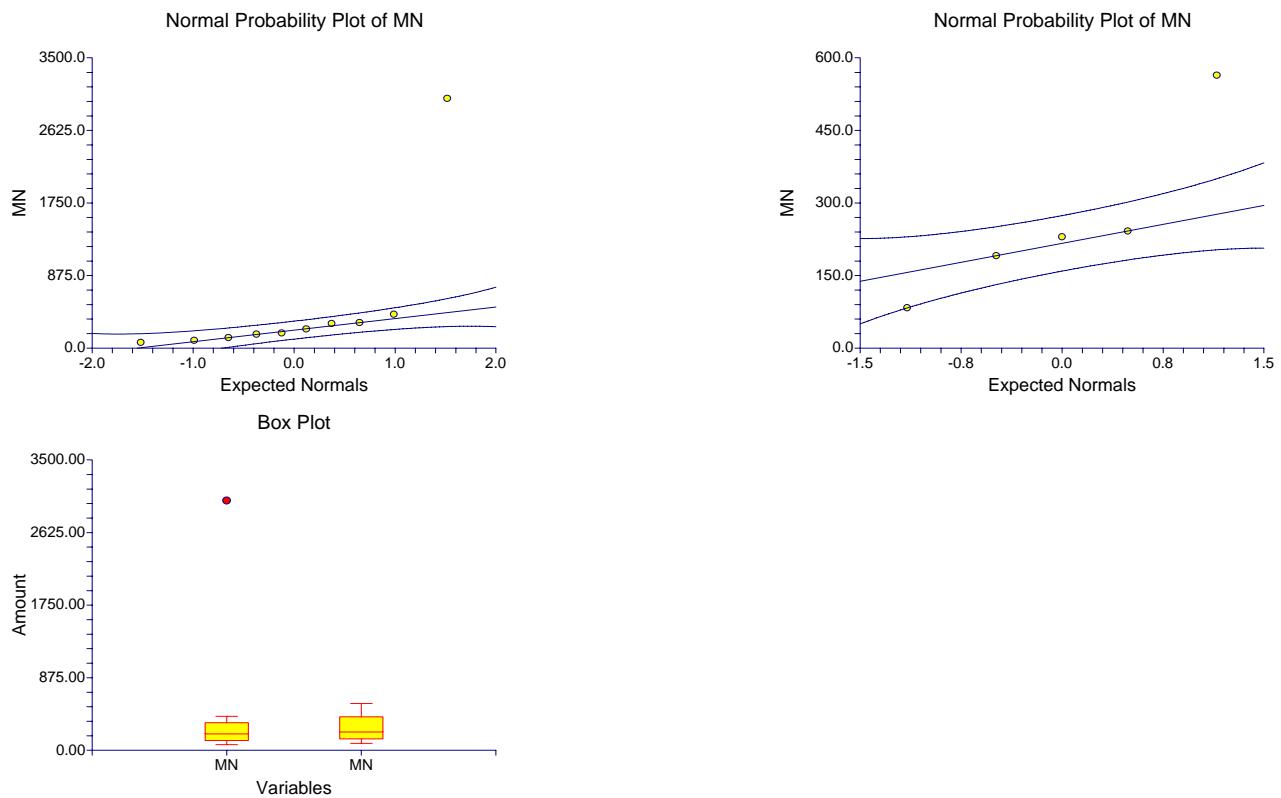
Histogram of MN



Histogram of MN



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
HG	10	0.05966	4.098564E-02	0.0129608	3.034064E-02	8.897936E-02
HG	5	0.191	0.1673708	7.485051E-02	-1.681835E-02	0.3988183

Note: T-alpha (HG) = 2.2622, T-alpha (HG) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.13134	0.0989057	5.417288E-02	-0.2483734	-1.430659E-02
Unequal	4.24	-0.13134	0.1723161	7.596435E-02	-0.3375935	0.0749135

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7151

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-2.4245	0.030648	Reject Ho	0.611527	0.324772
Difference < 0	-2.4245	0.015324	Reject Ho	0.742336	0.439294
Difference > 0	-2.4245	0.984676	Accept Ho	0.000039	0.000003
Difference: (HG)-(HG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.7290	0.154778	Accept Ho	0.272904	0.078437
Difference < 0	-1.7290	0.077389	Accept Ho	0.423591	0.138249
Difference > 0	-1.7290	0.922611	Accept Ho	0.000818	0.000121
Difference: (HG)-(HG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (HG)	0.6837	0.494176	Cannot reject normality
Kurtosis Normality (HG)	-0.6448	0.519073	Cannot reject normality
Omnibus Normality (HG)	0.8832	0.643020	Cannot reject normality
Skewness Normality (HG)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (HG)			
Omnibus Normality (HG)			
Variance-Ratio Equal-Variance Test	16.6762	0.000684	Reject equal variances
Modified-Levene Equal-Variance Test	5.5362	0.035035	Reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
HG	10	0.05	0.02	0.11
HG	5	0.11		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
HG	12.5	67.5	80	8.157672
HG	37.5	52.5	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

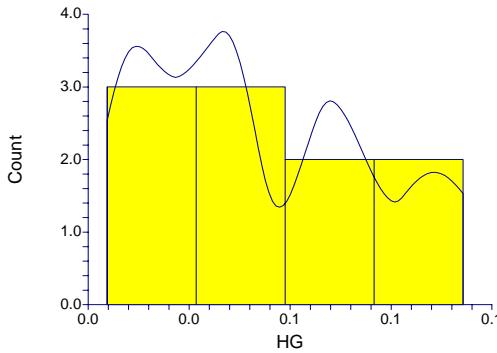
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.5323	0.125448	Accept Ho	1.4710	0.141289	Accept Ho
Diff<0			1.5323	0.062724	Accept Ho	1.4710	0.070644	Accept Ho
Diff>0			1.5323	0.937276	Accept Ho	1.5936	0.944486	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

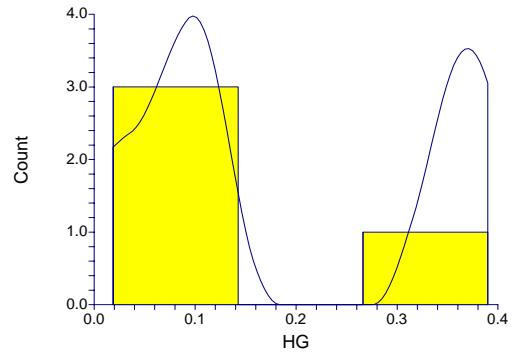
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.600000	0.6698	.050	Accept Ho	0.1658
D(1)<D(2)	0.600000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

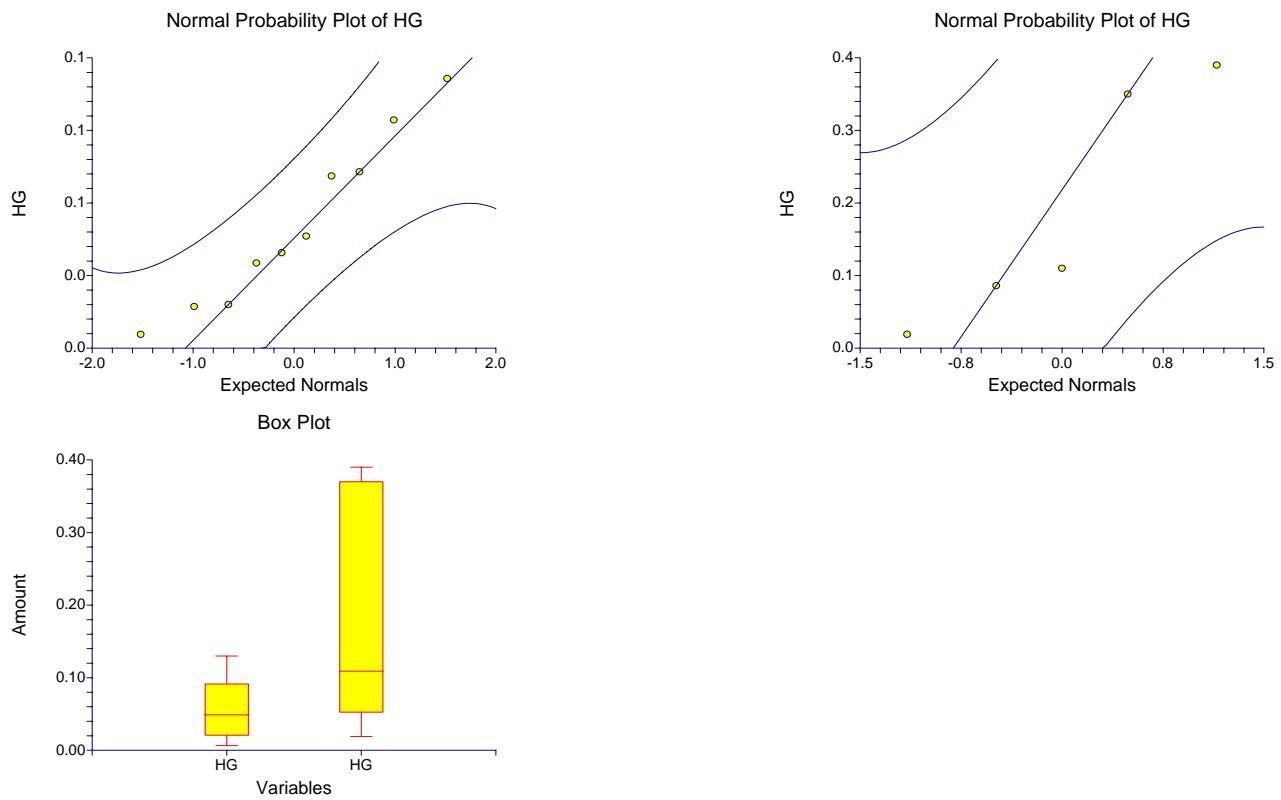
Histogram of HG



Histogram of HG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
MO	10	1.822	2.074077	0.6558807	0.3382947	3.305705
MO	5	2.606	3.286348	1.469699	-1.474539	6.686539

Note: T-alpha (MO) = 2.2622, T-alpha (MO) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.784	2.510233	1.374911	-3.754315	2.186315
Unequal	5.65	-0.784	3.886113	1.609408	-4.781562	3.213562

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.4839

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.5702	0.578252	Accept Ho	0.082657	0.020109
Difference < 0	-0.5702	0.289126	Accept Ho	0.134826	0.034971
Difference > 0	-0.5702	0.710874	Accept Ho	0.014388	0.002240
Difference: (MO)-(MO)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.4871	0.644473	Accept Ho	0.069502	0.015229
Difference < 0	-0.4871	0.322237	Accept Ho	0.112493	0.026175
Difference > 0	-0.4871	0.677763	Accept Ho	0.018817	0.003284
Difference: (MO)-(MO)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (MO)	1.9249	0.054239	Cannot reject normality
Kurtosis Normality (MO)	0.4868	0.626402	Cannot reject normality
Omnibus Normality (MO)	3.9423	0.139296	Cannot reject normality
Skewness Normality (MO)	0.0000		
Kurtosis Normality (MO)		1.000000	Cannot reject normality
Omnibus Normality (MO)			
Variance-Ratio Equal-Variance Test	2.5106	0.231426	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.1588	0.696727	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
MO	10	0.75	0.4	4.2
MO	5	1.3		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
MO	18	73	80	8.157672
MO	32	47	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

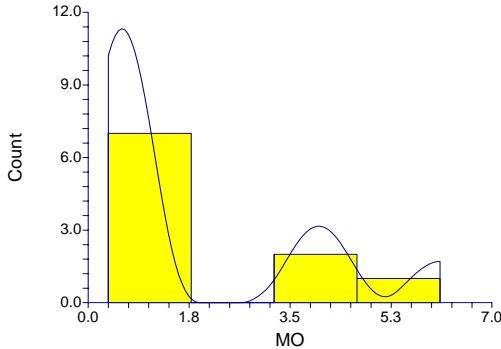
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.8581	0.390844	Accept Ho	0.7968	0.425570	Accept Ho
Diff<0			0.8581	0.195422	Accept Ho	0.7968	0.212785	Accept Ho
Diff>0			0.8581	0.804578	Accept Ho	0.9194	0.821052	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

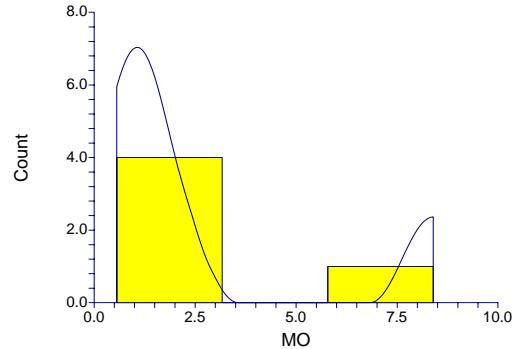
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	

Plots Section

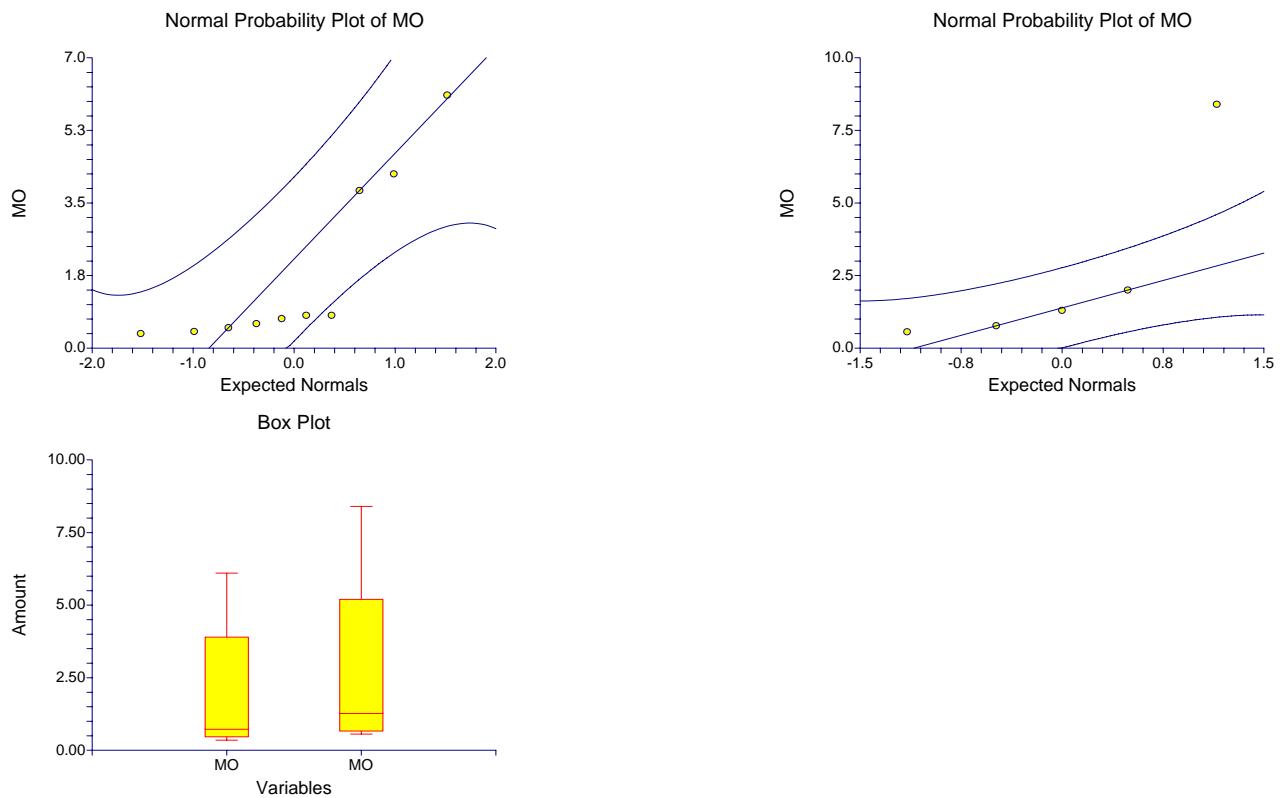
Histogram of MO



Histogram of MO



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NI	10	15.85	8.418927	2.662298	9.827462	21.87254
NI	5	13.24	8.388862	3.751613	2.823853	23.65615

Note: T-alpha (NI) = 2.2622, T-alpha (NI) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	2.61	8.409688	4.606175	-7.341037	12.56104
Unequal	8.13	2.61	11.88492	4.600265	-7.969419	13.18942

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2997

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5666	0.580617	Accept Ho	0.082241	0.019974
Difference < 0	0.5666	0.709692	Accept Ho	0.014513	0.002263
Difference > 0	0.5666	0.290308	Accept Ho	0.134089	0.034722
Difference: (NI)-(NI)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.5674	0.585797	Accept Ho	0.079502	0.018548
Difference < 0	0.5674	0.707101	Accept Ho	0.015082	0.002465
Difference > 0	0.5674	0.292899	Accept Ho	0.130618	0.032511
Difference: (NI)-(NI)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NI)	0.8151	0.415019	Cannot reject normality
Kurtosis Normality (NI)	-0.2621	0.793235	Cannot reject normality
Omnibus Normality (NI)	0.7331	0.693128	Cannot reject normality
Skewness Normality (NI)	0.0000		
Kurtosis Normality (NI)		1.000000	Cannot reject normality
Omnibus Normality (NI)			
Variance-Ratio Equal-Variance Test	1.0072	1.082011	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0249	0.876923	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NI	10	13.6	7.3	28.4
NI	5	12.4		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NI	31	86	80	8.164966
NI	19	34	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

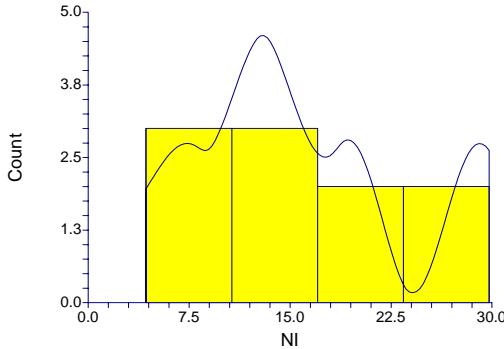
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.513487	Accept Ho	-0.7348	0.462433	Accept Ho	-0.6736	0.500559	Accept Ho
Diff<0	0.743257	Accept Ho	-0.7348	0.768784	Accept Ho	-0.7961	0.787008	Accept Ho
Diff>0	0.256743	Accept Ho	-0.7348	0.231216	Accept Ho	-0.6736	0.250280	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

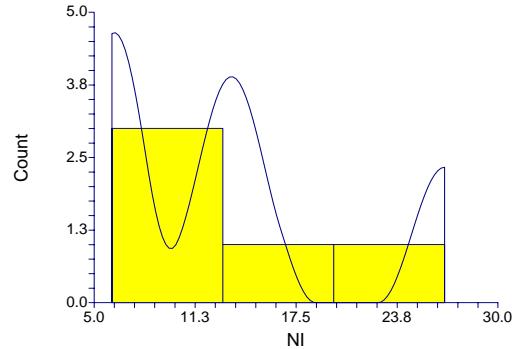
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.100000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	

Plots Section

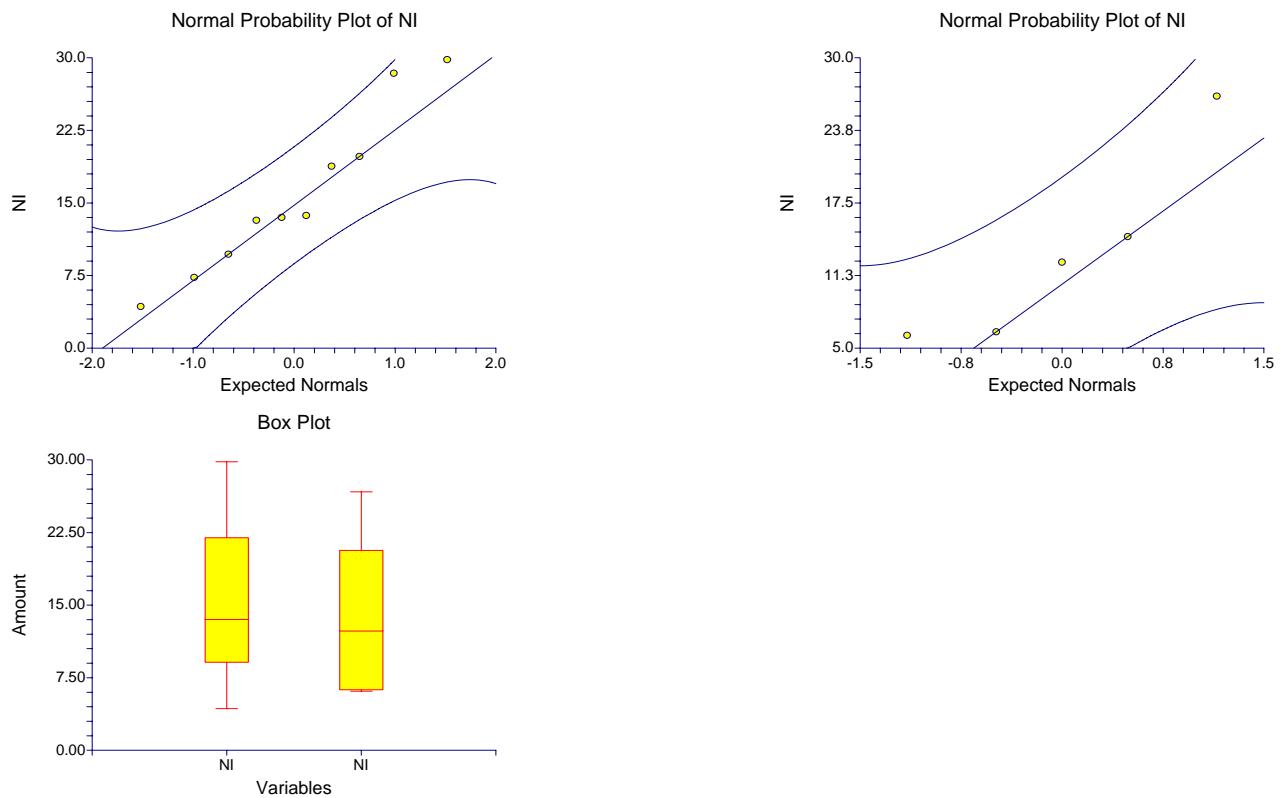
Histogram of NI



Histogram of NI



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
K	10	1490.5	1549.383	489.958	382.138	2598.862
K	5	654	265.8073	118.8726	323.9567	984.0433

Note: T-alpha (K) = 2.2622, T-alpha (K) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	836.5	1297.569	710.7078	-698.8909	2371.891
Unequal	10.01	836.5	1572.018	504.1721	-286.6729	1959.673

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2278

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1770	0.260298	Accept Ho	0.193698	0.061823
Difference < 0	1.1770	0.869851	Accept Ho	0.002858	0.000346
Difference > 0	1.1770	0.130149	Accept Ho	0.298420	0.102541
Difference: (K)-(K)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.6592	0.128035	Accept Ho	0.323579	0.119820
Difference < 0	1.6592	0.935982	Accept Ho	0.000685	0.000074
Difference > 0	1.6592	0.064018	Accept Ho	0.460686	0.188513
Difference: (K)-(K)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (K)	2.4034	0.016243	Reject normality
Kurtosis Normality (K)	1.4618	0.143788	Cannot reject normality
Omnibus Normality (K)	7.9134	0.019126	Reject normality
Skewness Normality (K)	0.0000		
Kurtosis Normality (K)		1.000000	Cannot reject normality
Omnibus Normality (K)			
Variance-Ratio Equal-Variance Test	33.9769	0.004003	Reject equal variances
Modified-Levene Equal-Variance Test	1.7107	0.213556	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
K	10	917.5	377	3580
K	5	689		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
K	32	87	80	8.164966
K	18	33	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

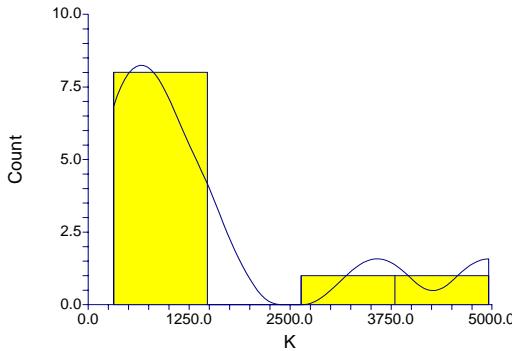
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.439560	Accept Ho	-0.8573	0.391267	Accept Ho	-0.7961	0.425983	Accept Ho
Diff<0	0.780220	Accept Ho	-0.8573	0.804366	Accept Ho	-0.9186	0.820837	Accept Ho
Diff>0	0.219780	Accept Ho	-0.8573	0.195634	Accept Ho	-0.7961	0.212992	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

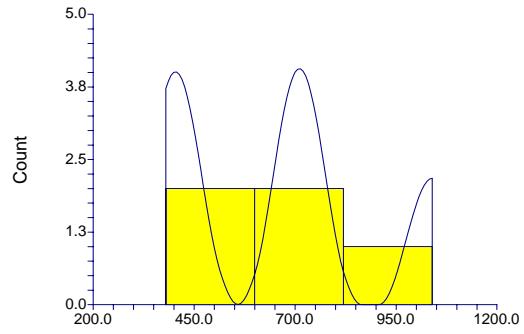
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section

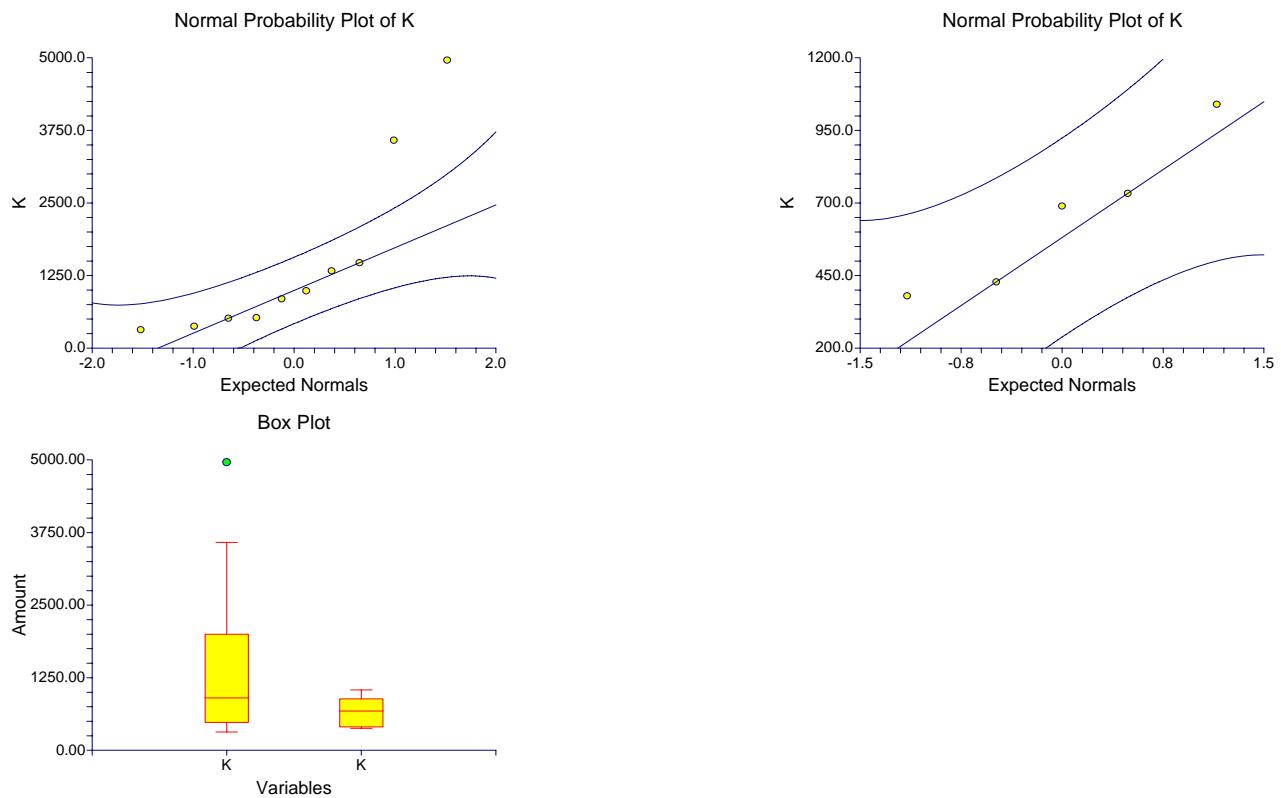
Histogram of K



Histogram of K



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SE	10	0.519	0.2209676	6.987608E-02	0.3609293	0.6770707
SE	5	1.094	0.3736041	0.1670808	0.6301093	1.557891

Note: T-alpha (SE) = 2.2622, T-alpha (SE) = 2.7764

Confidence-Limits of Difference Section

Variance	DF	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Assumption						
Equal	13	-0.575	0.2770393	0.1517407	-0.9028158	-0.2471842
Unequal	5.45	-0.575	0.4340584	0.181104	-1.029271	-0.1207292

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.5083

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-3.7894	0.002252	Reject Ho	0.937902	0.764958
Difference < 0	-3.7894	0.001126	Reject Ho	0.973650	0.854804
Difference > 0	-3.7894	0.998874	Accept Ho	0.000000	0.000000
Difference: (SE)-(SE)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-3.1750	0.021916	Reject Ho	0.736504	0.374607
Difference < 0	-3.1750	0.010958	Reject Ho	0.865855	0.527001
Difference > 0	-3.1750	0.989042	Accept Ho	0.000003	0.000000
Difference: (SE)-(SE)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SE)	1.8328	0.066839	Cannot reject normality
Kurtosis Normality (SE)	1.0024	0.316156	Cannot reject normality
Omnibus Normality (SE)	4.3638	0.112829	Cannot reject normality
Skewness Normality (SE)	0.0000		
Kurtosis Normality (SE)		1.000000	Cannot reject normality
Omnibus Normality (SE)			
Variance-Ratio Equal-Variance Test	2.8587	0.175698	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.6646	0.219460	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
SE	10	0.4275	0.35	0.7
SE	5	1.1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
SE	4	59	80	8.157672
SE	46	61	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

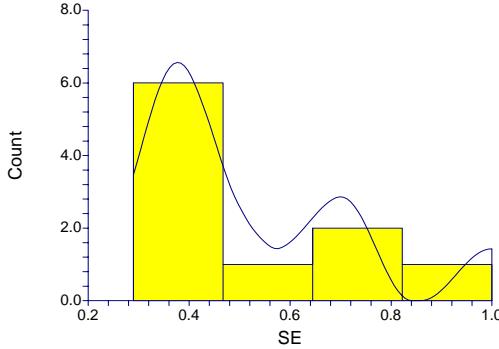
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			2.5743	0.010045	Reject Ho	2.5130	0.011972	Reject Ho
Diff<0			2.5743	0.005023	Reject Ho	2.5130	0.005986	Reject Ho
Diff>0			2.5743	0.994977	Accept Ho	2.6356	0.995800	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

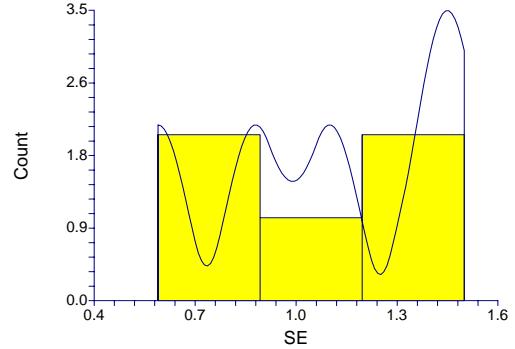
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.700000	0.6698	.050	Reject Ho	0.0606
D(1)<D(2)	0.700000	0.6698	.025	Reject Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

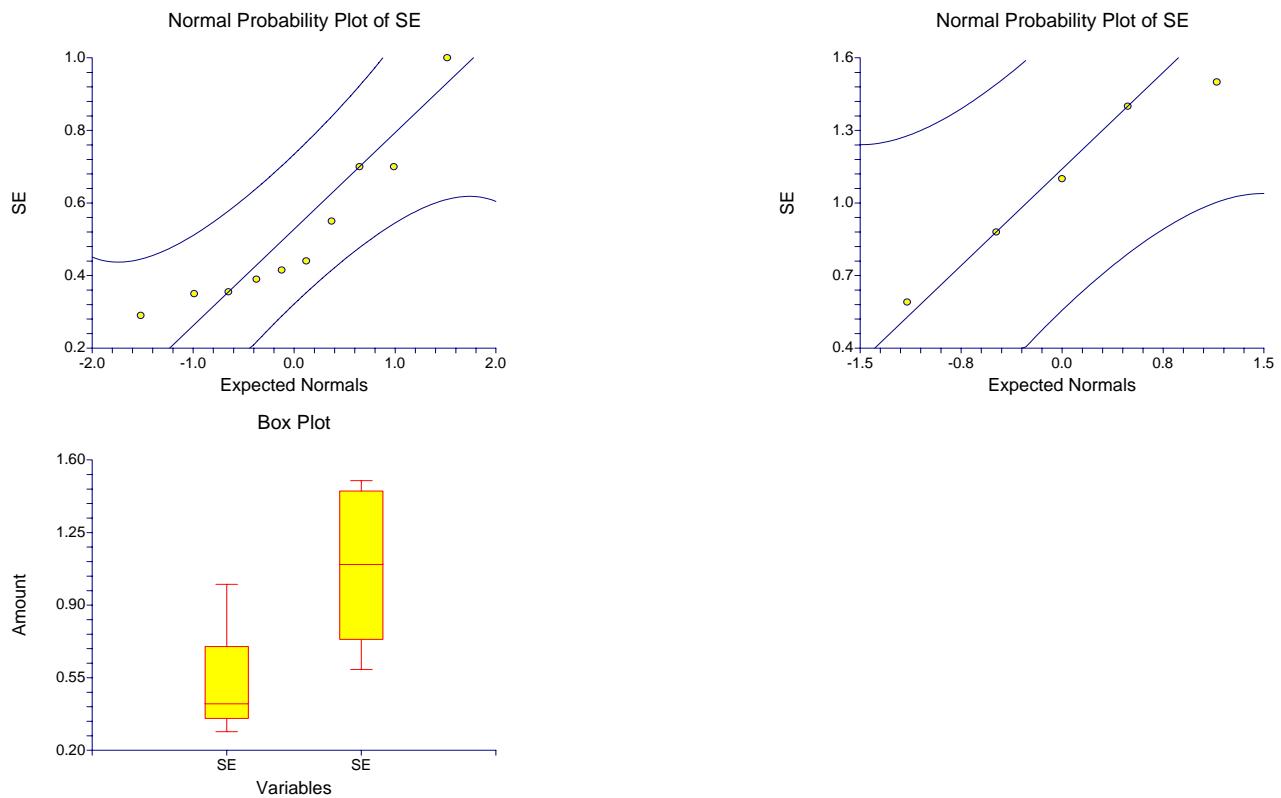
Histogram of SE



Histogram of SE



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
AG	10	0.1463	9.538699E-02	3.016401E-02	7.806426E-02	0.2145357
AG	5	0.2692	0.248901	0.1113119	-3.985139E-02	0.5782514

Note: T-alpha (AG) = 2.2622, T-alpha (AG) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.1229	0.1592518	8.722582E-02	-0.3113399	6.553993E-02
Unequal	4.60	-0.1229	0.2665528	0.1153265	-0.4273239	0.1815239

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.6397

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.4090	0.182308	Accept Ho	0.257136	0.090513
Difference < 0	-1.4090	0.091154	Accept Ho	0.378529	0.144726
Difference > 0	-1.4090	0.908846	Accept Ho	0.001420	0.000157
Difference: (AG)-(AG)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.0657	0.339302	Accept Ho	0.137792	0.034279
Difference < 0	-1.0657	0.169651	Accept Ho	0.232244	0.062730
Difference > 0	-1.0657	0.830349	Accept Ho	0.005004	0.000798
Difference: (AG)-(AG)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (AG)	1.4458	0.148237	Cannot reject normality
Kurtosis Normality (AG)	0.5771	0.563879	Cannot reject normality
Omnibus Normality (AG)	2.4233	0.297701	Cannot reject normality
Skewness Normality (AG)	0.0000		
Kurtosis Normality (AG)		1.000000	Cannot reject normality
Omnibus Normality (AG)			
Variance-Ratio Equal-Variance Test	6.8089	0.016623	Reject equal variances
Modified-Levene Equal-Variance Test	2.3397	0.150076	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
AG	10	0.13	0.056	0.26
AG	5	0.11		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
AG	19.5	74.5	80	8.150373
AG	30.5	45.5	40	8.150373

Number Sets of Ties = 2, Multiplicity Factor = 12

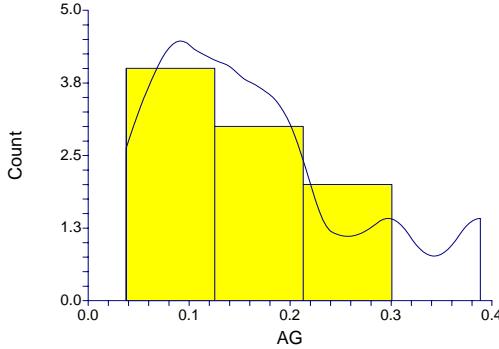
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.6748	0.499793	Accept Ho	0.6135	0.539566	Accept Ho
Diff<0			0.6748	0.249896	Accept Ho	0.6135	0.269783	Accept Ho
Diff>0			0.6748	0.750104	Accept Ho	0.7362	0.769184	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

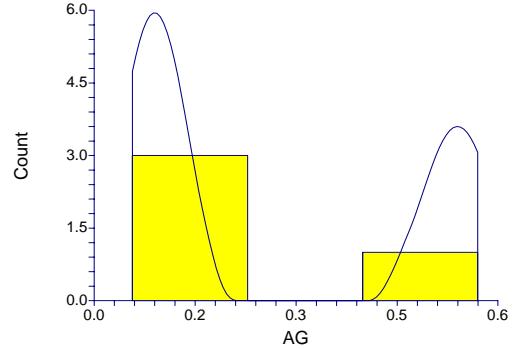
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.100000	0.6698	.025	Accept Ho	0.6547

Plots Section

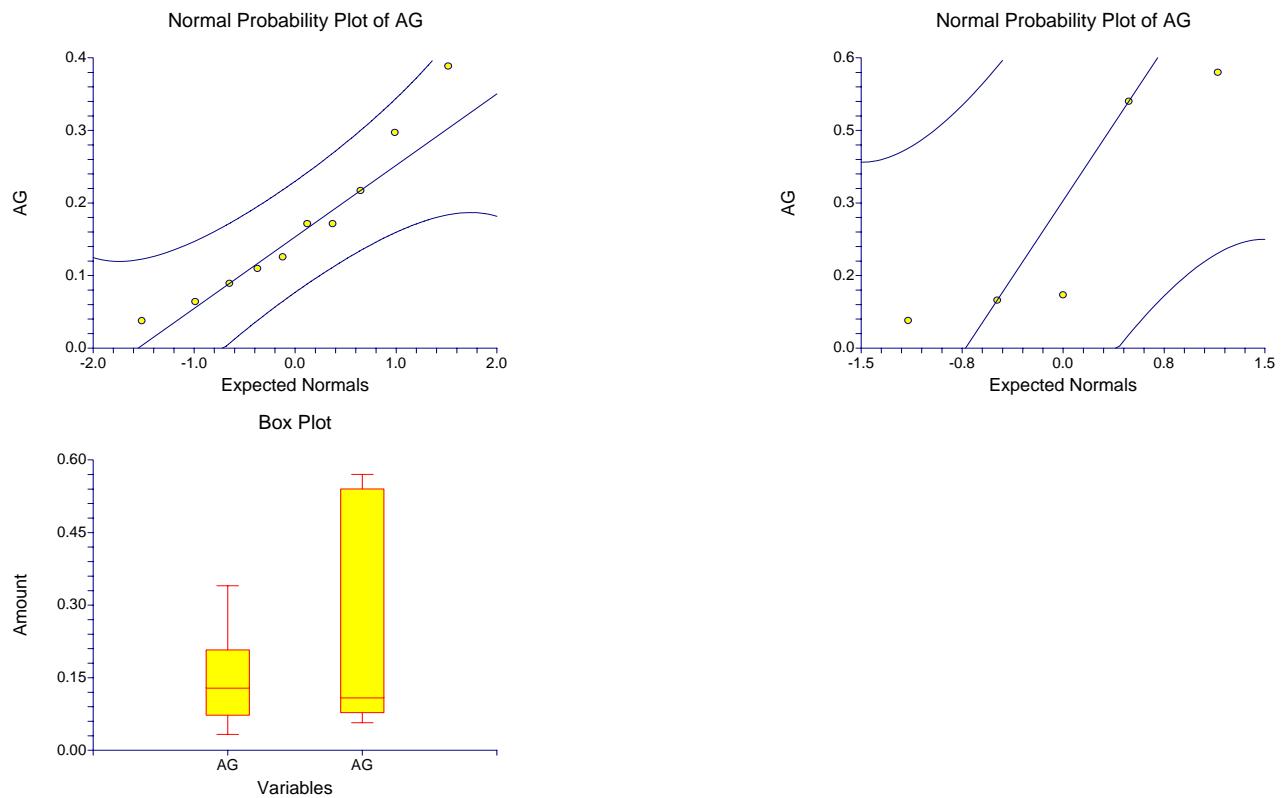
Histogram of AG



Histogram of AG



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
NA	10	201.51	251.7436	79.60831	21.42348	381.5965
NA	5	159.8	66.80344	29.87541	76.85257	242.7474

Note: T-alpha (NA) = 2.2622, T-alpha (NA) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	41.71	212.7158	116.5093	-209.993	293.413
Unequal	11.21	41.71	260.4564	85.02955	-145.0057	228.4257

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1959

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.3580	0.726091	Accept Ho	0.062746	0.013821
Difference < 0	0.3580	0.636954	Accept Ho	0.023580	0.004025
Difference > 0	0.3580	0.363046	Accept Ho	0.095925	0.022567
Difference: (NA)-(NA)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.4905	0.633213	Accept Ho	0.073495	0.017051
Difference < 0	0.4905	0.683393	Accept Ho	0.017556	0.002861
Difference > 0	0.4905	0.316607	Accept Ho	0.118339	0.029302
Difference: (NA)-(NA)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (NA)	3.5980	0.000321	Reject normality
Kurtosis Normality (NA)	3.2361	0.001212	Reject normality
Omnibus Normality (NA)	23.4182	0.000008	Reject normality
Skewness Normality (NA)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (NA)			
Omnibus Normality (NA)			
Variance-Ratio Equal-Variance Test	14.2010	0.021225	Reject equal variances
Modified-Levene Equal-Variance Test	0.4800	0.500621	Cannot reject equal variances

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
NA	10	96.5	75.6	252
NA	5	156		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
NA	22	77	80	8.164966
NA	28	43	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

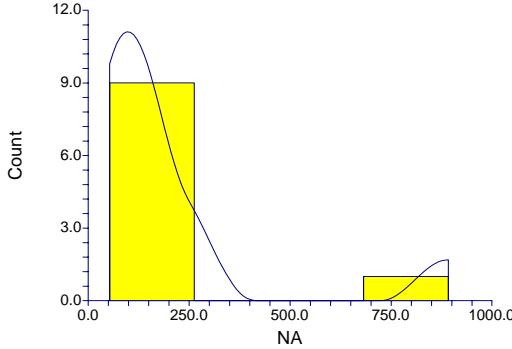
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.767899	Accept Ho	0.3674	0.713303	Accept Ho	0.3062	0.759463	Accept Ho
Diff<0	0.383949	Accept Ho	0.3674	0.356652	Accept Ho	0.3062	0.379731	Accept Ho
Diff>0	0.616051	Accept Ho	0.3674	0.643348	Accept Ho	0.4287	0.665915	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

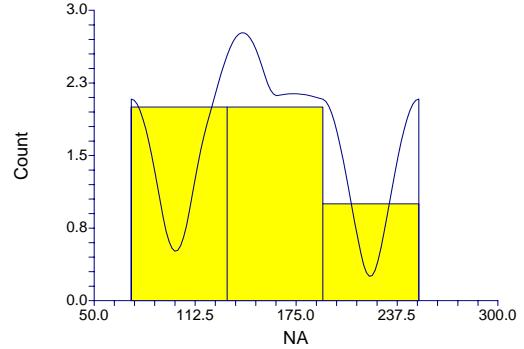
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

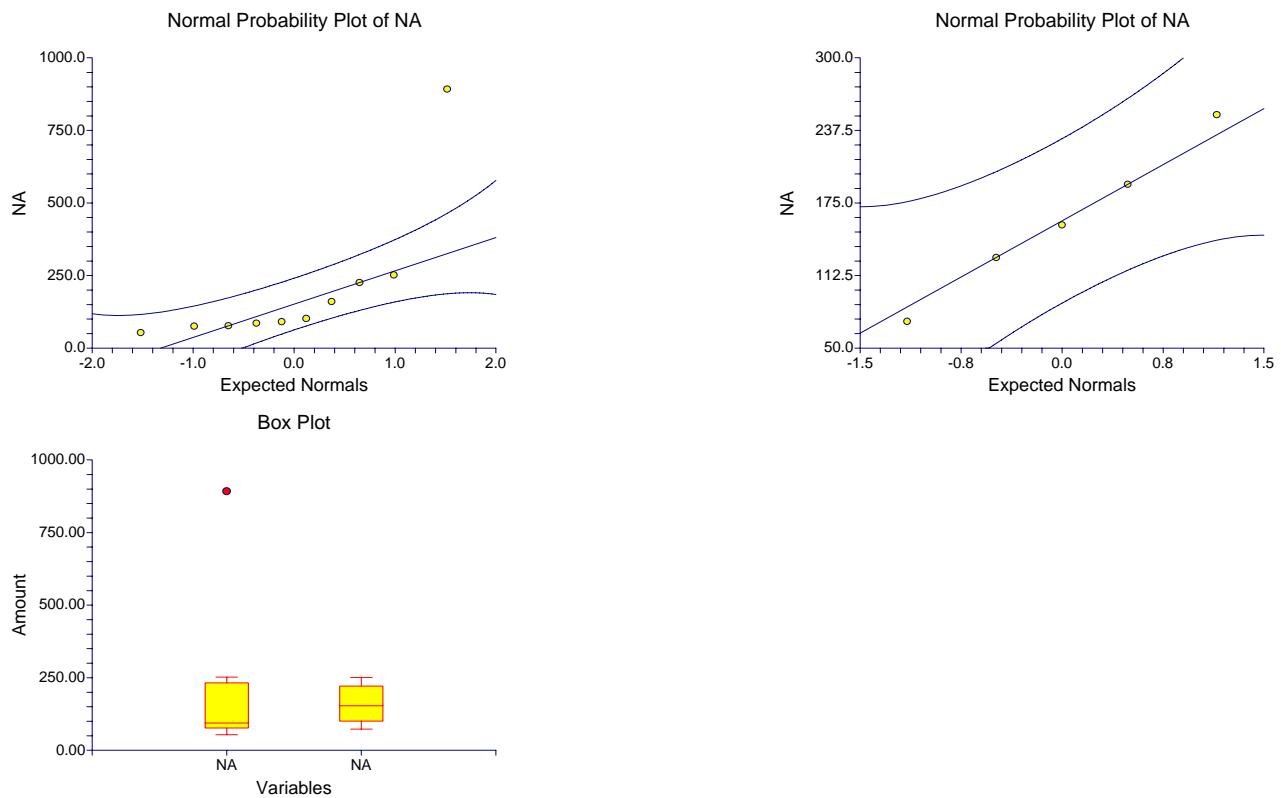
Histogram of NA



Histogram of NA



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TL	10	0.1651	0.1357755	4.293599E-02	6.797205E-02	0.262228
TL	5	0.1256	5.811024E-02	2.598769E-02	5.344661E-02	0.1977534

Note: T-alpha (TL) = 2.2622, T-alpha (TL) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.0395	0.1174806	0.0643468	-0.0995128	0.1785128
Unequal	12.91	0.0395	0.1476882	5.018824E-02	-6.900616E-02	0.1480062

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1620

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.6139	0.549899	Accept Ho	0.087936	0.021840
Difference < 0	0.6139	0.725051	Accept Ho	0.012940	0.001978
Difference > 0	0.6139	0.274949	Accept Ho	0.144007	0.038113
Difference: (TL)-(TL)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.7870	0.445474	Accept Ho	0.112907	0.030360
Difference < 0	0.7870	0.777263	Accept Ho	0.008369	0.001190
Difference > 0	0.7870	0.222737	Accept Ho	0.184423	0.052850
Difference: (TL)-(TL)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TL)	1.6103	0.107336	Cannot reject normality
Kurtosis Normality (TL)	0.1719	0.863542	Cannot reject normality
Omnibus Normality (TL)	2.6226	0.269475	Cannot reject normality
Skewness Normality (TL)	0.0000		
Kurtosis Normality (TL)		1.000000	Cannot reject normality
Omnibus Normality (TL)			
Variance-Ratio Equal-Variance Test	5.4593	0.117315	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.1607	0.300901	Cannot reject equal variances

Two-Sample Test Report

Page

2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TL	10	0.0955	0.054	0.35
TL	5	0.15		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TL	27	82	80	8.164966
TL	23	38	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

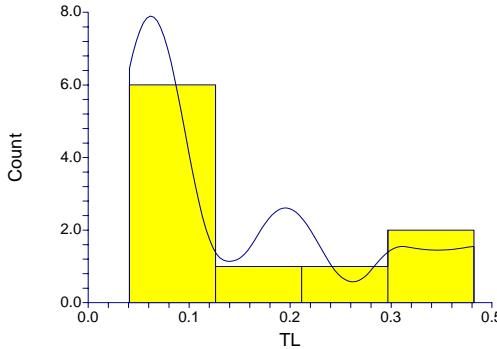
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0	0.859141	Accept Ho	-0.2449	0.806496	Accept Ho	-0.1837	0.854240	Accept Ho
Diff<0	0.570430	Accept Ho	-0.2449	0.596752	Accept Ho	-0.3062	0.620269	Accept Ho
Diff>0	0.429570	Accept Ho	-0.2449	0.403248	Accept Ho	-0.1837	0.427120	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

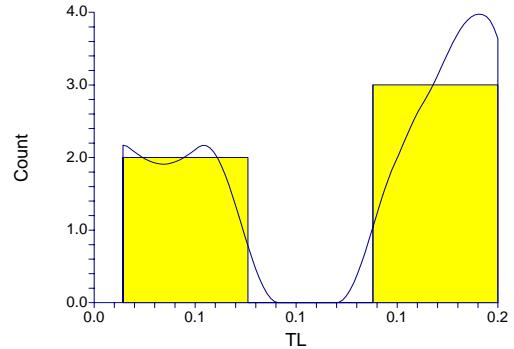
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section

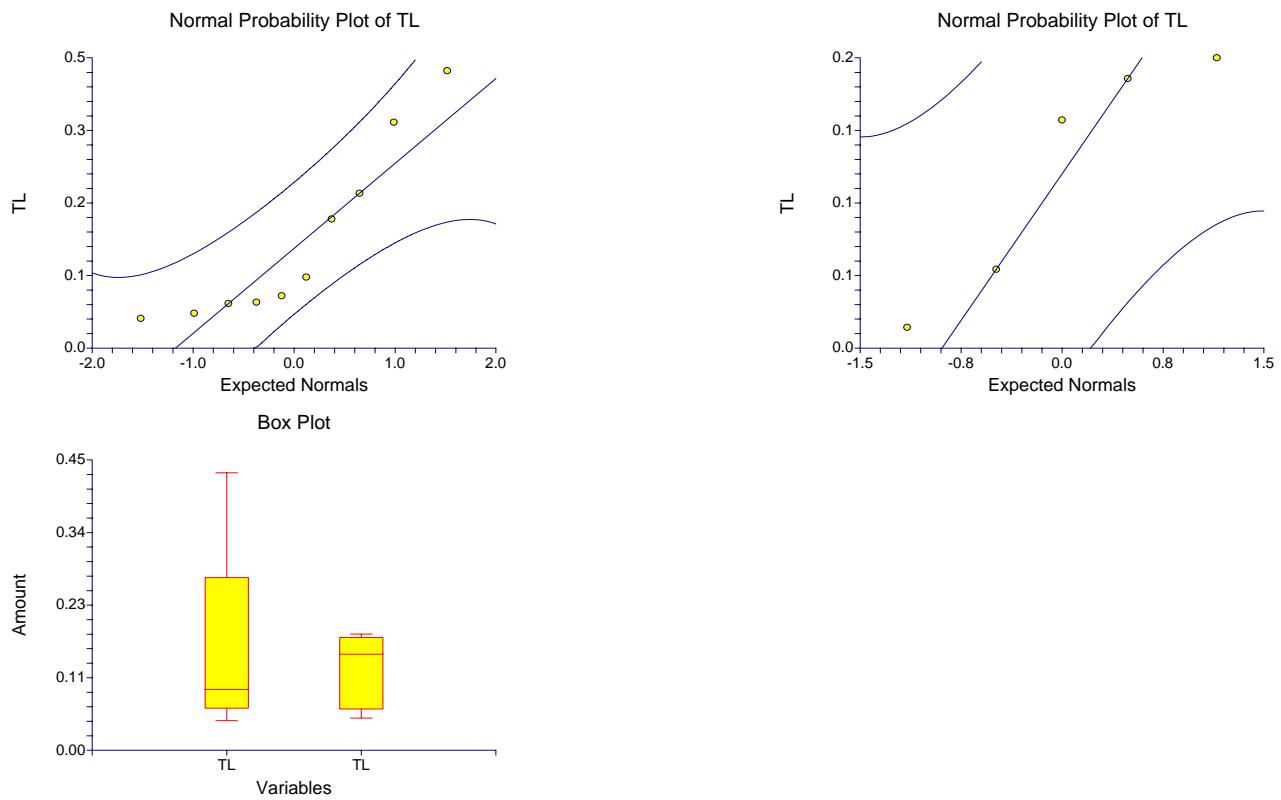
Histogram of TL



Histogram of TL



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TH	10	5.4	3.409464	1.078167	2.961016	7.838984
TH	5	2.94	1.297305	0.5801724	1.329183	4.550817

Note: T-alpha (TH) = 2.2622, T-alpha (TH) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	2.46	2.926694	1.603016	-1.003106	5.923106
Unequal	12.59	2.46	3.647937	1.224355	-0.1938109	5.113811

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1675

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5346	0.148852	Accept Ho	0.295730	0.109707
Difference < 0	1.5346	0.925574	Accept Ho	0.000954	0.000100
Difference > 0	1.5346	0.074426	Accept Ho	0.424466	0.171851
Difference: (TH)-(TH)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	2.0092	0.066449	Accept Ho	0.458524	0.205386
Difference < 0	2.0092	0.966776	Accept Ho	0.000190	0.000017
Difference > 0	2.0092	0.033224	Reject Ho	0.600572	0.298298
Difference: (TH)-(TH)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TH)	2.6074	0.009123	Reject normality
Kurtosis Normality (TH)	2.2436	0.024860	Reject normality
Omnibus Normality (TH)	11.8321	0.002696	Reject normality
Skewness Normality (TH)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (TH)			
Omnibus Normality (TH)			
Variance-Ratio Equal-Variance Test	6.9070	0.078407	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.9819	0.339822	Cannot reject equal variances

Two-Sample Test Report

Page

2

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TH	10	4.7	2.4	7.8
TH	5	3.5		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TH	39.5	94.5	80	8.150373
TH	10.5	25.5	40	8.150373

Number Sets of Ties = 2, Multiplicity Factor = 12

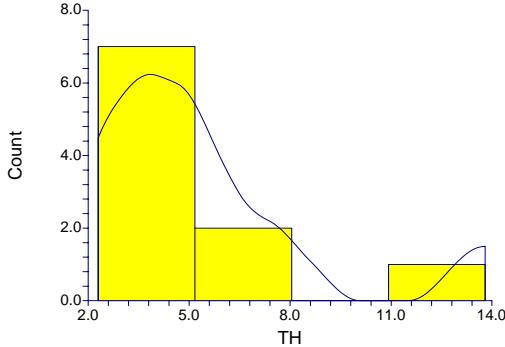
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.7791	0.075230	Accept Ho	-1.7177	0.085849	Accept Ho
Diff<0			-1.7791	0.962385	Accept Ho	-1.8404	0.967146	Accept Ho
Diff>0			-1.7791	0.037615	Reject Ho	-1.7177	0.042924	Reject Ho

Kolmogorov-Smirnov Test For Different Distributions

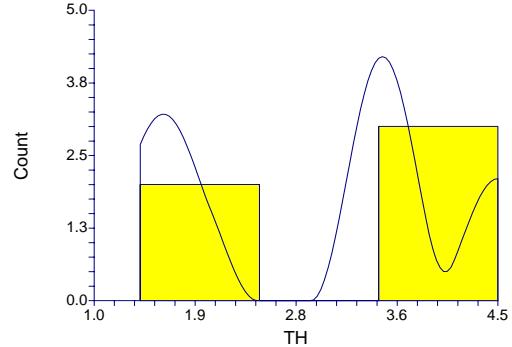
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.500000	0.6698	.050	Accept Ho	0.3506
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.500000	0.6698	.025	Accept Ho	

Plots Section

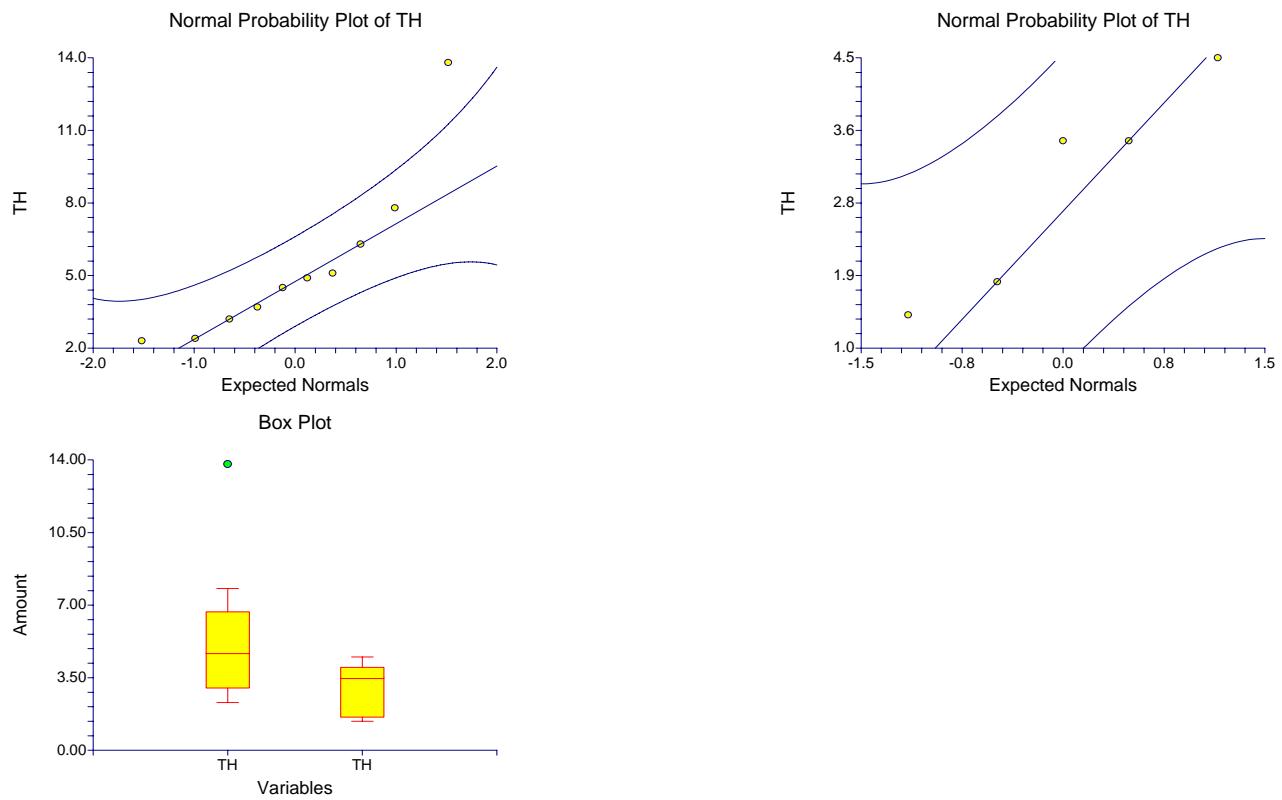
Histogram of TH



Histogram of TH



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
TI	10	378	165.3696	52.29446	259.7017	496.2983
TI	5	297	101.262	45.28576	171.2666	422.7334

Note: T-alpha (TI) = 2.2622, T-alpha (TI) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	81	148.6193	81.40214	-94.85862	256.8586
Unequal	12.17	81	193.9101	69.17739	-69.49697	231.497

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.1755

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9951	0.337869	Accept Ho	0.151851	0.044818
Difference < 0	0.9951	0.831066	Accept Ho	0.004791	0.000624
Difference > 0	0.9951	0.168934	Accept Ho	0.241574	0.076296
Difference: (TI)-(TI)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1709	0.264062	Accept Ho	0.190655	0.060102
Difference < 0	1.1709	0.867969	Accept Ho	0.002942	0.000361
Difference > 0	1.1709	0.132031	Accept Ho	0.294992	0.100217
Difference: (TI)-(TI)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (TI)	0.7057	0.480360	Cannot reject normality
Kurtosis Normality (TI)	-0.8982	0.369055	Cannot reject normality
Omnibus Normality (TI)	1.3049	0.520771	Cannot reject normality
Skewness Normality (TI)	0.0000		
Kurtosis Normality (TI)		1.000000	Cannot reject normality
Omnibus Normality (TI)			
Variance-Ratio Equal-Variance Test	2.6670	0.357957	Cannot reject equal variances
Modified-Levene Equal-Variance Test	1.4460	0.250621	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
TI	10	350	196	591
TI	5	322		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
TI	32	87	80	8.164966
TI	18	33	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

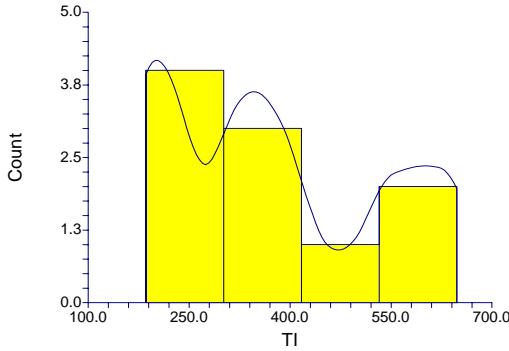
Alternative Hypothesis	Exact Probability		Approximation Without Correction		Approximation With Correction	
	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.439560	Accept Ho	-0.8573	0.391267	Accept Ho	-0.7961
Diff<0	0.780220	Accept Ho	-0.8573	0.804366	Accept Ho	-0.9186
Diff>0	0.219780	Accept Ho	-0.8573	0.195634	Accept Ho	-0.7961

Kolmogorov-Smirnov Test For Different Distributions

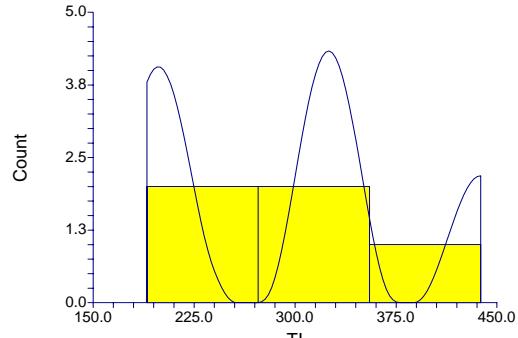
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.100000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section

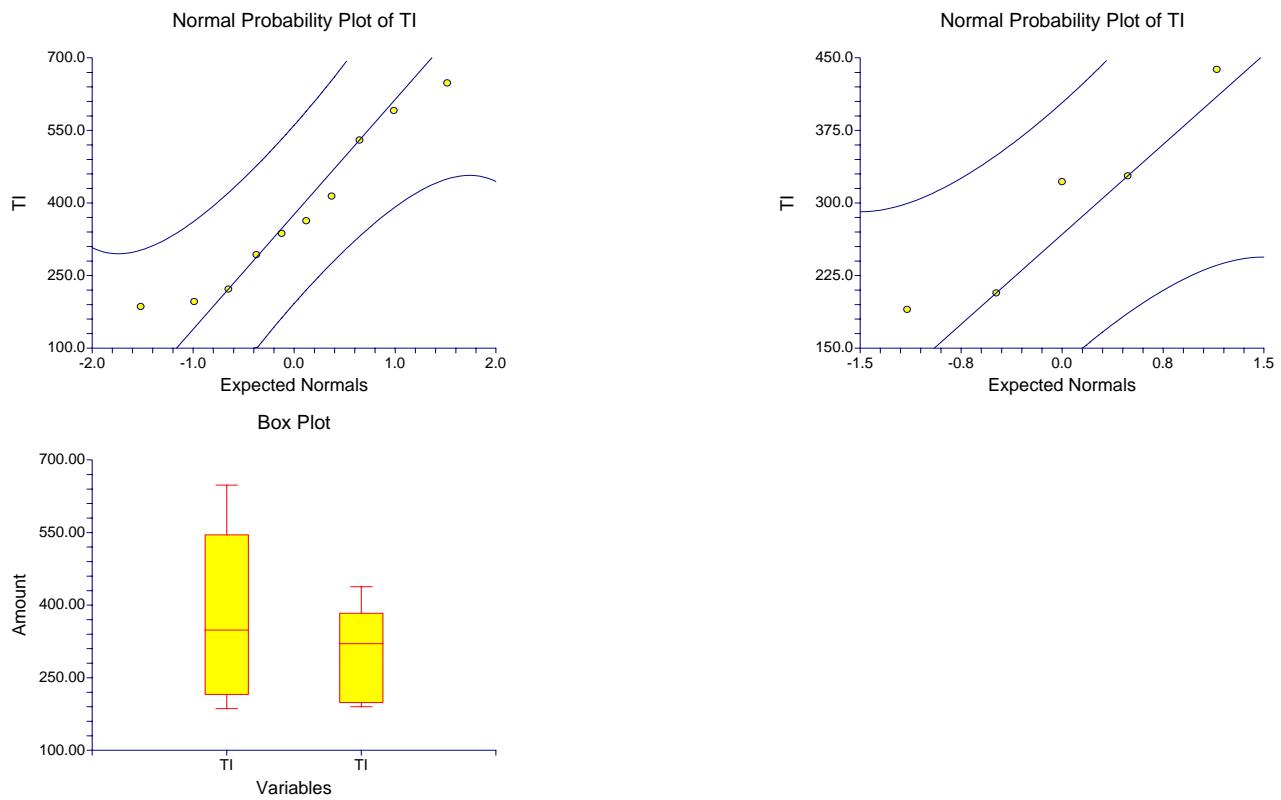
Histogram of TI



Histogram of TI



Two-Sample Test Report



Two-Sample Test Report

Page

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
W	10	0.7	0.3195135	0.101039	0.4714338	0.9285662
W	5	0.998	0.5331229	0.2384198	0.3360405	1.659959

Note: T-alpha (W) = 2.2622, T-alpha (W) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-0.298	0.3976547	0.2178044	-0.7685379	0.1725379
Unequal	5.49	-0.298	0.6215375	0.2589457	-0.9462543	0.3502543

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.5034

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.3682	0.194433	Accept Ho	0.245214	0.084852
Difference < 0	-1.3682	0.097217	Accept Ho	0.363940	0.136572
Difference > 0	-1.3682	0.902783	Accept Ho	0.001611	0.000181
Difference: (W)-(W)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.1508	0.297475	Accept Ho	0.160375	0.042684
Difference < 0	-1.1508	0.148737	Accept Ho	0.263207	0.076431
Difference > 0	-1.1508	0.851263	Accept Ho	0.003783	0.000566
Difference: (W)-(W)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (W)	0.6165	0.537592	Cannot reject normality
Kurtosis Normality (W)	-0.0877	0.930107	Cannot reject normality
Omnibus Normality (W)	0.3877	0.823775	Cannot reject normality
Skewness Normality (W)	0.0000		
Kurtosis Normality (W)		1.000000	Cannot reject normality
Omnibus Normality (W)			
Variance-Ratio Equal-Variance Test	2.7840	0.186161	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.3498	0.564370	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
W	10	0.755	0.4	0.96
W	5	0.88		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
W	16	71	80	8.157672
W	34	49	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

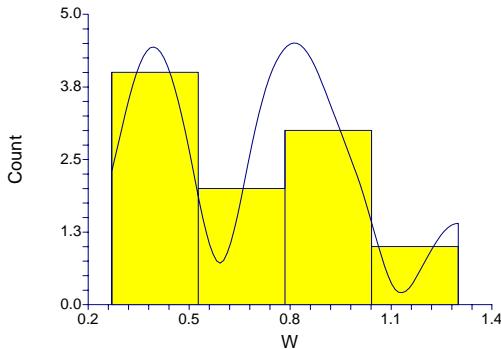
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			1.1033	0.269916	Accept Ho	1.0420	0.297428	Accept Ho
Diff<0			1.1033	0.134958	Accept Ho	1.0420	0.148714	Accept Ho
Diff>0			1.1033	0.865042	Accept Ho	1.1645	0.877899	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

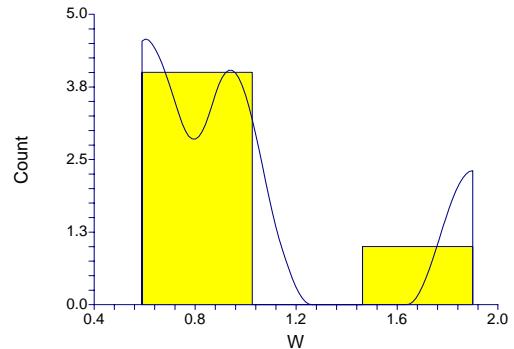
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.000000	0.6698	.025	Accept Ho	

Plots Section

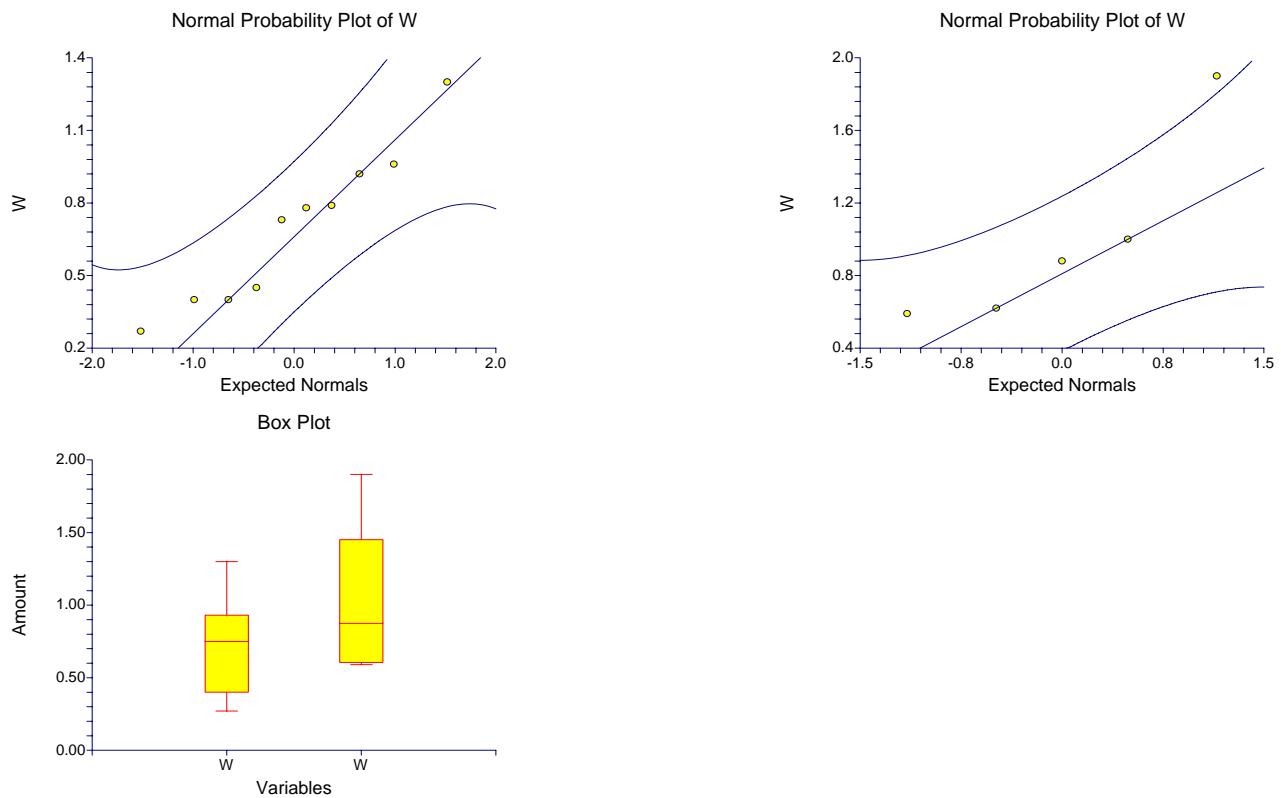
Histogram of W



Histogram of W



Two-Sample Test Report



Two-Sample Test Report

Page

1

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U	10	1.797	1.578495	0.4991639	0.6678129	2.926187
U	5	0.998	0.3234501	0.1446513	0.5963836	1.399616

Note: T-alpha (U) = 2.2622, T-alpha (U) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.799	1.325585	0.7260529	-0.769542	2.367542
Unequal	10.41	0.799	1.611293	0.5197005	-0.3528143	1.950814

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.2163

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.1005	0.291087	Accept Ho	0.175217	0.054125
Difference < 0	1.1005	0.854456	Accept Ho	0.003563	0.000445
Difference > 0	1.1005	0.145544	Accept Ho	0.273783	0.090801
Difference: (U)-(U)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.5374	0.154010	Accept Ho	0.287222	0.102223
Difference < 0	1.5374	0.922995	Accept Ho	0.001002	0.000112
Difference > 0	1.5374	0.077005	Accept Ho	0.417680	0.163243
Difference: (U)-(U)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U)	3.5271	0.000420	Reject normality
Kurtosis Normality (U)	3.1845	0.001450	Reject normality
Omnibus Normality (U)	22.5814	0.000012	Reject normality
Skewness Normality (U)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (U)			
Omnibus Normality (U)			
Variance-Ratio Equal-Variance Test	23.8161	0.007957	Reject equal variances
Modified-Levene Equal-Variance Test	0.6572	0.432130	Cannot reject equal variances

Two-Sample Test Report

Page

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U	10	1.3	0.85	2.2
U	5	1.1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U	37.5	92.5	80	8.062258
U	12.5	27.5	40	8.062258

Number Sets of Ties = 2, Multiplicity Factor = 84

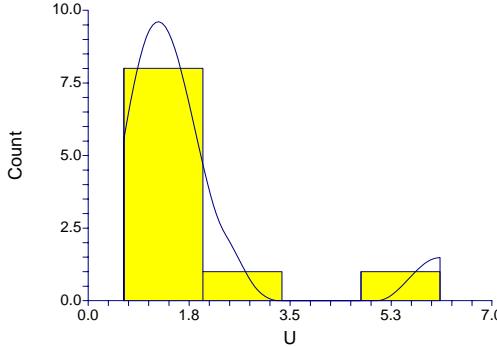
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.5504	0.121037	Accept Ho	-1.4884	0.136641	Accept Ho
Diff<0			-1.5504	0.939481	Accept Ho	-1.6125	0.946568	Accept Ho
Diff>0			-1.5504	0.060519	Accept Ho	-1.4884	0.068321	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

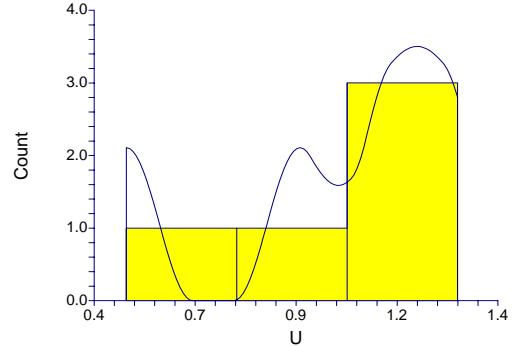
Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	0.6547
D(1)<D(2)	0.000000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.400000	0.6698	.025	Accept Ho	

Plots Section

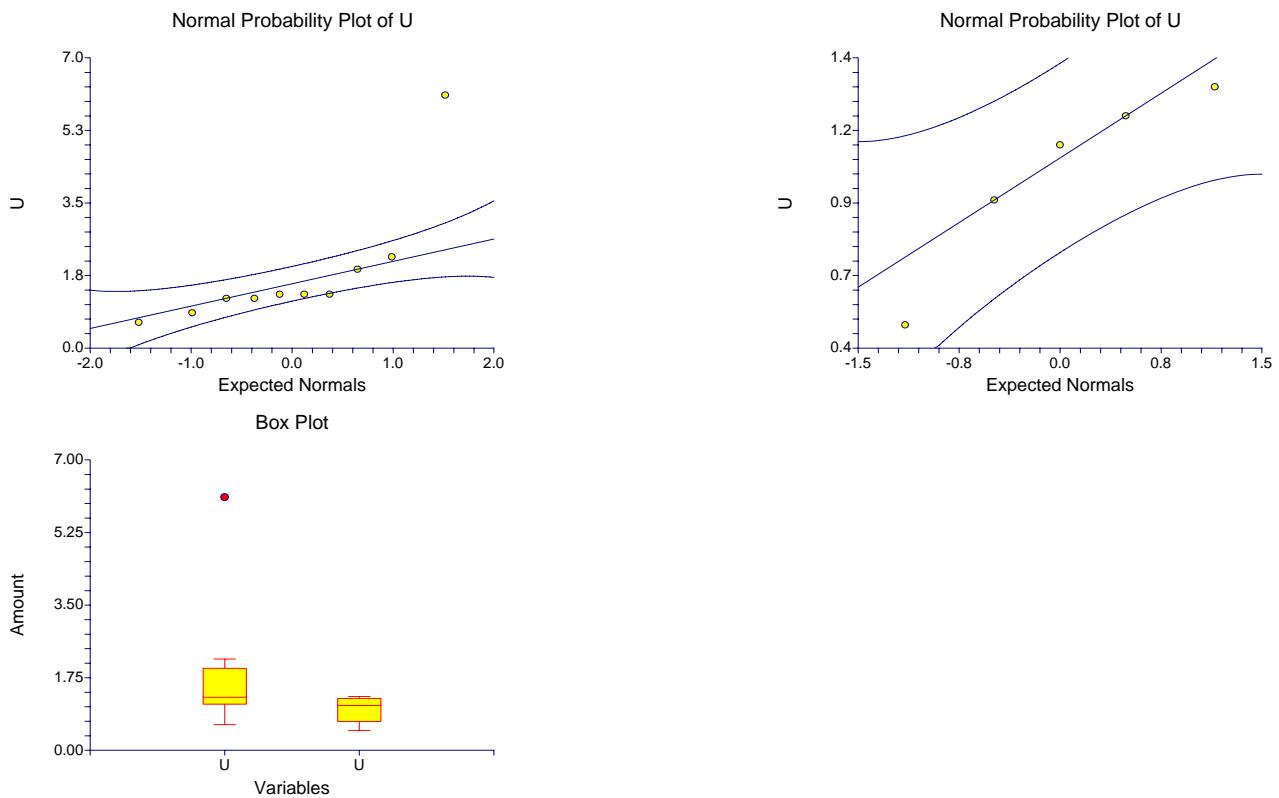
Histogram of U



Histogram of U



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
U	9	1.318889	0.481104	0.160368	0.9490796	1.688698
U	5	0.998	0.3234501	0.1446513	0.5963836	1.399616

Note: T-alpha (U) = 2.3060, T-alpha (U) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	12	0.3208889	0.4349491	0.242603	-0.2076977	0.8494755
Unequal	11.32	0.3208889	0.579725	0.2159674	-0.1528034	0.7945812

Note: T-alpha (Equal) = 2.1788, T-alpha (Unequal) = 2.1934

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.3227	0.210592	Accept Ho	0.229912	0.077040
Difference < 0	1.3227	0.894704	Accept Ho	0.001882	0.000219
Difference > 0	1.3227	0.105296	Accept Ho	0.345780	0.125650
Difference: (U)-(U)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	1.4858	0.164629	Accept Ho	0.275141	0.097548
Difference < 0	1.4858	0.917685	Accept Ho	0.001153	0.000128
Difference > 0	1.4858	0.082315	Accept Ho	0.402015	0.155821
Difference: (U)-(U)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (U)	0.8884	0.374328	Cannot reject normality
Kurtosis Normality (U)	0.5072	0.611999	Cannot reject normality
Omnibus Normality (U)	1.0465	0.592586	Cannot reject normality
Skewness Normality (U)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (U)			
Omnibus Normality (U)			
Variance-Ratio Equal-Variance Test	2.2124	0.461994	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.2772	0.608131	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
U	9	1.3	0.85	1.9
U	5	1.1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
U	32.5	77.5	67.5	7.383714
U	12.5	27.5	37.5	7.383714

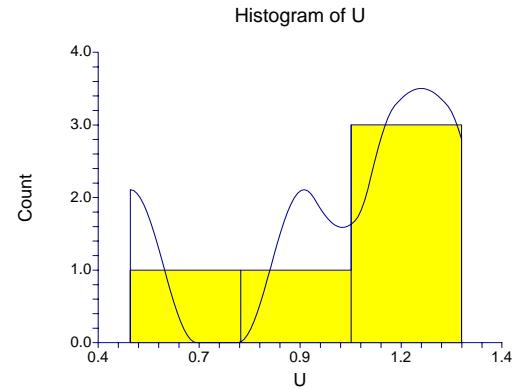
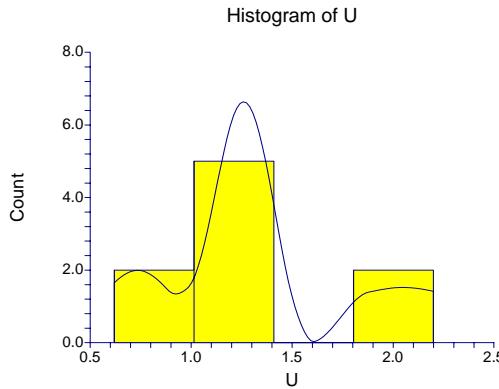
Number Sets of Ties = 2, Multiplicity Factor = 84

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-1.3543	0.175630	Accept Ho	-1.2866	0.198228	Accept Ho
Diff<0			-1.3543	0.912185	Accept Ho	-1.4220	0.922494	Accept Ho
Diff>0			-1.3543	0.087815	Accept Ho	-1.2866	0.099114	Accept Ho

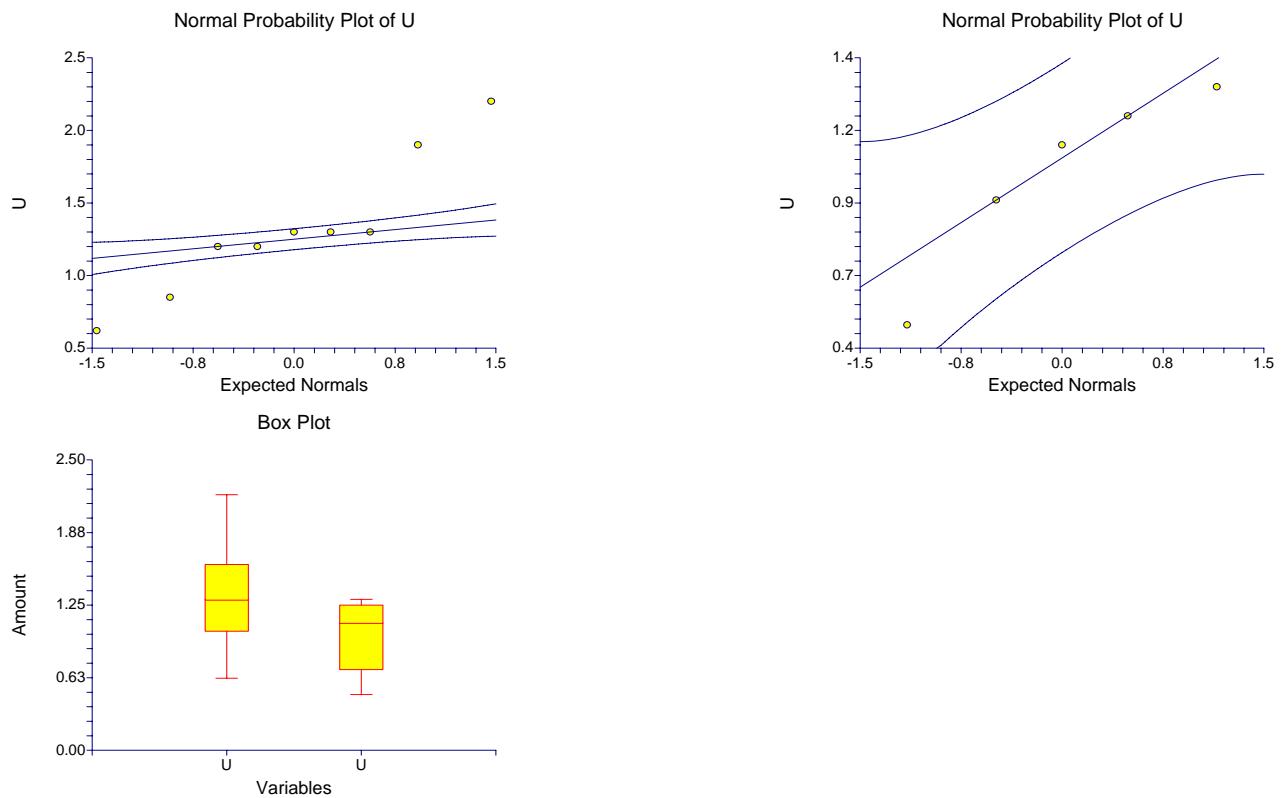
Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.377778	0.6796	.050	Accept Ho	0.6264
D(1)<D(2)	0.022222	0.6796	.025	Accept Ho	
D(1)>D(2)	0.377778	0.6796	.025	Accept Ho	

Plots Section



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
V	10	19.54	15.14472	4.789182	8.706117	30.37388
V	5	21.76	17.43482	7.797089	0.1118099	43.40819

Note: T-alpha (V) = 2.2622, T-alpha (V) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-2.22	15.88457	8.700339	-21.01594	16.57594
Unequal	7.14	-2.22	23.09406	9.150457	-23.77401	19.33401

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.3555

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.2552	0.802590	Accept Ho	0.056453	0.011914
Difference < 0	-0.2552	0.401295	Accept Ho	0.080355	0.018037
Difference > 0	-0.2552	0.598705	Accept Ho	0.029569	0.005280
Difference: (V)-(V)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-0.2426	0.815133	Accept Ho	0.055159	0.011414
Difference < 0	-0.2426	0.407566	Accept Ho	0.077186	0.016816
Difference > 0	-0.2426	0.592434	Accept Ho	0.031032	0.005717
Difference: (V)-(V)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (V)	2.4599	0.013897	Reject normality
Kurtosis Normality (V)	1.5792	0.114286	Cannot reject normality
Omnibus Normality (V)	8.5451	0.013946	Reject normality
Skewness Normality (V)	0.0000	1.000000	Cannot reject normality
Kurtosis Normality (V)			
Omnibus Normality (V)			
Variance-Ratio Equal-Variance Test	1.3253	0.663964	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.1727	0.684488	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
V	10	14.5	7.5	39.6
V	5	17.6		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
V	22	77	80	8.164966
V	28	43	40	8.164966

Number Sets of Ties = 0, Multiplicity Factor = 0

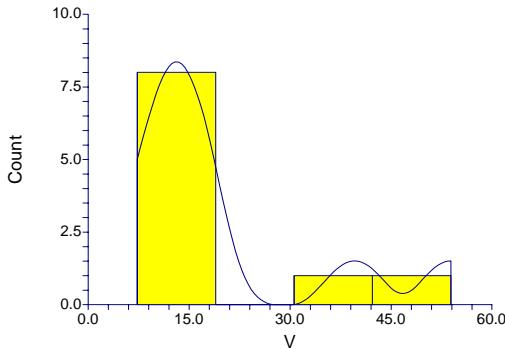
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob	Decision	Prob	Decision	Prob	Decision	Prob	Decision
Diff<>0	0.767899	Accept Ho	0.3674	0.713303	Accept Ho	0.3062	0.759463	Accept Ho
Diff<0	0.383949	Accept Ho	0.3674	0.356652	Accept Ho	0.3062	0.379731	Accept Ho
Diff>0	0.616051	Accept Ho	0.3674	0.643348	Accept Ho	0.4287	0.665915	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

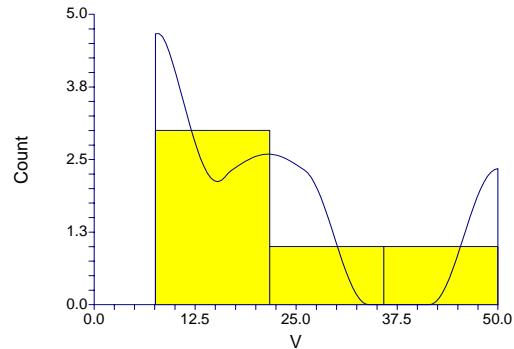
Alternative Hypothesis	Dmn	Reject Ho if	Test Alpha	Decision	Prob
	Criterion Value	Greater Than	Level	(Test Alpha)	Level
D(1)<>D(2)	0.300000	0.6698	.050	Accept Ho	0.9191
D(1)<D(2)	0.300000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.200000	0.6698	.025	Accept Ho	

Plots Section

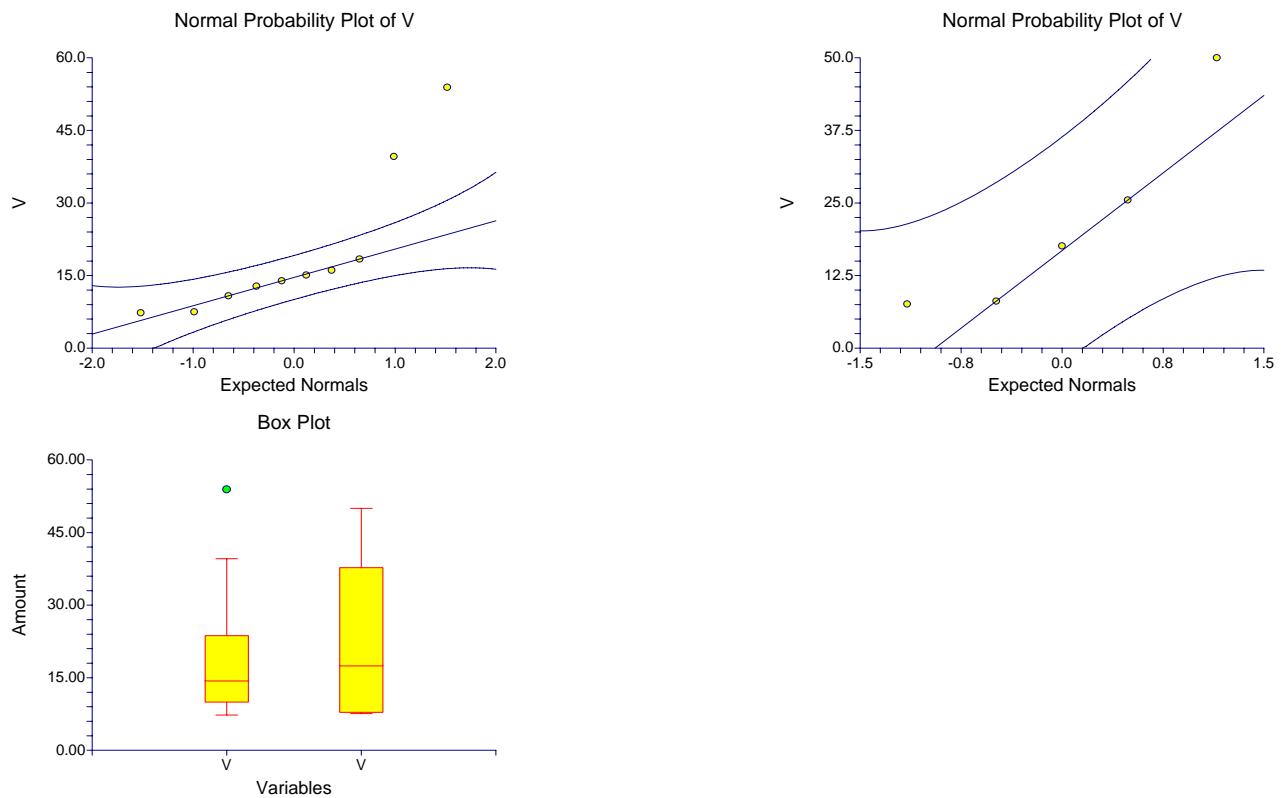
Histogram of V



Histogram of V



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZN	10	41.79	11.40725	3.607291	33.62974	49.95026
ZN	5	95.68	97.89552	43.7802	-25.87334	217.2333

Note: T-alpha (ZN) = 2.2622, T-alpha (ZN) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	-53.89	55.12591	30.1937	-119.1195	11.33953
Unequal	4.05	-53.89	98.55789	43.92857	-175.2124	67.43241

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.7618

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.7848	0.097633	Accept Ho	0.379712	0.156225
Difference < 0	-1.7848	0.048816	Reject Ho	0.518411	0.234788
Difference > 0	-1.7848	0.951184	Accept Ho	0.000415	0.000040
Difference: (ZN)-(ZN)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-1.2268	0.286345	Accept Ho	0.159913	0.040019
Difference < 0	-1.2268	0.143172	Accept Ho	0.268501	0.073614
Difference > 0	-1.2268	0.856828	Accept Ho	0.003456	0.000555
Difference: (ZN)-(ZN)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZN)	-1.3866	0.165575	Cannot reject normality
Kurtosis Normality (ZN)	0.9024	0.366861	Cannot reject normality
Omnibus Normality (ZN)	2.7368	0.254511	Cannot reject normality
Skewness Normality (ZN)	0.0000		
Kurtosis Normality (ZN)		1.000000	Cannot reject normality
Omnibus Normality (ZN)			
Variance-Ratio Equal-Variance Test	73.6484	0.000001	Reject equal variances
Modified-Levene Equal-Variance Test	4.7738	0.047804	Reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZN	10	42.45	30.3	54.2
ZN	5	54.2		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZN	19.5	74.5	80	8.157672
ZN	30.5	45.5	40	8.157672

Number Sets of Ties = 1, Multiplicity Factor = 6

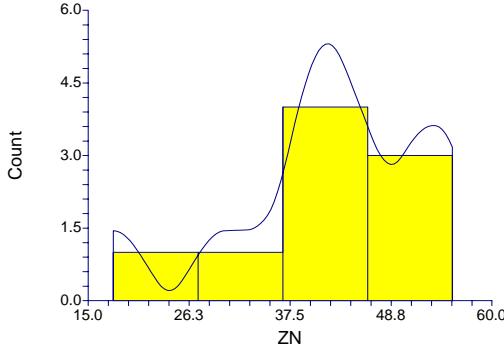
Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			0.6742	0.500177	Accept Ho	0.6129	0.539929	Accept Ho
Diff<0			0.6742	0.250088	Accept Ho	0.6129	0.269965	Accept Ho
Diff>0			0.6742	0.749912	Accept Ho	0.7355	0.768984	Accept Ho

Kolmogorov-Smirnov Test For Different Distributions

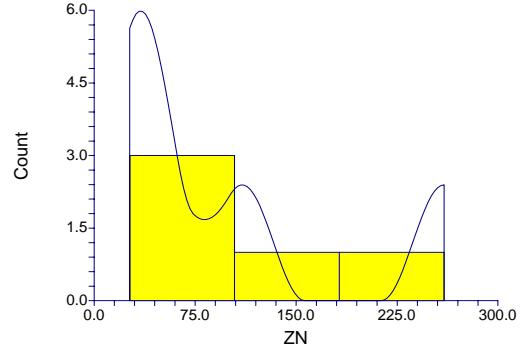
Alternative Hypothesis	Dmn	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.400000	0.6698	.050	Accept Ho	
D(1)<D(2)	0.400000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.300000	0.6698	.025	Accept Ho	0.6547

Plots Section

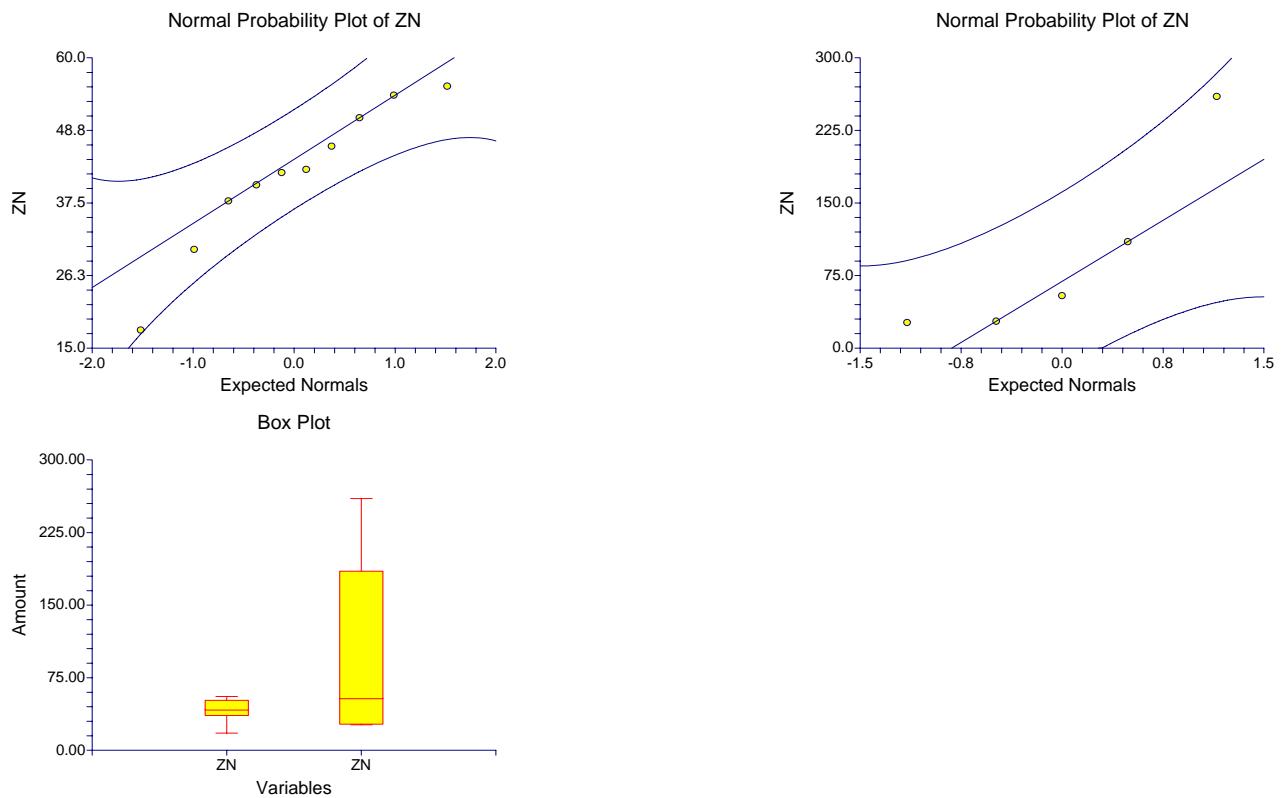
Histogram of ZN



Histogram of ZN



Two-Sample Test Report



Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
ZR	10	2.15	0.9882645	0.3125167	1.443038	2.856962
ZR	5	1.582	1.362432	0.6092979	-0.1096823	3.273682

Note: T-alpha (ZR) = 2.2622, T-alpha (ZR) = 2.7764

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.568	1.116825	0.6117103	-0.7535198	1.88952
Unequal	6.19	0.568	1.683118	0.6847705	-1.095119	2.231119

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.4287

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.9285	0.370046	Accept Ho	0.138372	0.039667
Difference < 0	0.9285	0.814977	Accept Ho	0.005748	0.000770
Difference > 0	0.9285	0.185023	Accept Ho	0.222356	0.068092
Difference: (ZR)-(ZR)					

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	0.8295	0.437642	Accept Ho	0.109097	0.026955
Difference < 0	0.8295	0.781179	Accept Ho	0.008374	0.001317
Difference > 0	0.8295	0.218821	Accept Ho	0.183101	0.048560
Difference: (ZR)-(ZR)					

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (ZR)	-0.7544	0.450608	Cannot reject normality
Kurtosis Normality (ZR)	-0.1366	0.891346	Cannot reject normality
Omnibus Normality (ZR)	0.5878	0.745358	Cannot reject normality
Skewness Normality (ZR)	0.0000		
Kurtosis Normality (ZR)		1.000000	Cannot reject normality
Omnibus Normality (ZR)			
Variance-Ratio Equal-Variance Test	1.9006	0.389198	Cannot reject equal variances
Modified-Levene Equal-Variance Test	0.0235	0.880576	Cannot reject equal variances

Two-Sample Test Report

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Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
ZR	10	2.2	0.75	3.4
ZR	5	1		

Mann-Whitney U or Wilcoxon Rank-Sum Test for Difference in Medians

Variable	Mann Whitney U	W Sum Ranks	Mean of W	Std Dev of W
ZR	33	88	80	8.128433
ZR	17	32	40	8.128433

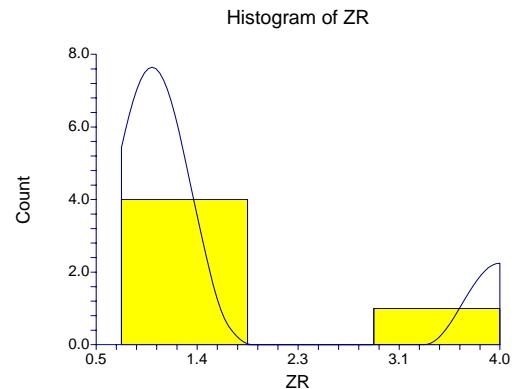
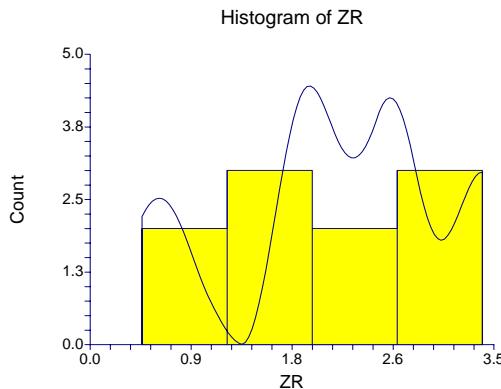
Number Sets of Ties = 2, Multiplicity Factor = 30

Alternative Hypothesis	Exact Probability		Approximation Without Correction			Approximation With Correction		
	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)	Z-Value	Prob Level	Decision (5%)
Diff<>0			-0.9842	0.325017	Accept Ho	-0.9227	0.356170	Accept Ho
Diff<0			-0.9842	0.837491	Accept Ho	-1.0457	0.852153	Accept Ho
Diff>0			-0.9842	0.162509	Accept Ho	-0.9227	0.178085	Accept Ho

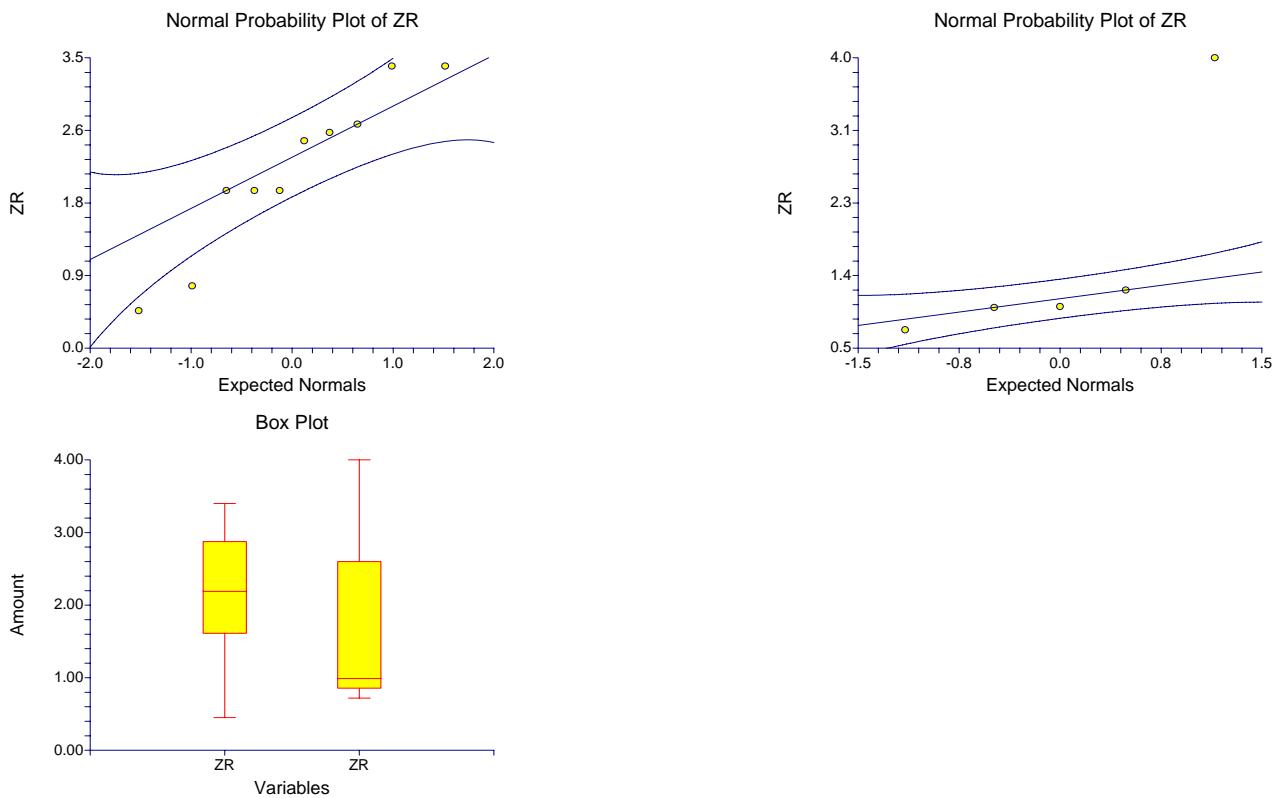
Kolmogorov-Smirnov Test For Different Distributions

Alternative Hypothesis	Dmn Criterion Value	Reject Ho if Greater Than	Test Alpha Level	Decision (Test Alpha)	Prob Level
D(1)<>D(2)	0.600000	0.6698	.050	Accept Ho	0.1658
D(1)<D(2)	0.200000	0.6698	.025	Accept Ho	
D(1)>D(2)	0.600000	0.6698	.025	Accept Ho	

Plots Section



Two-Sample Test Report



E-5 HUDSON BOG PEAT VERSUS SEDIMENT

Results of comparison of Muck and Peat samples sets and dist/outliers for combined set

Parameter	Dist(SW - W)	Sum of Ranks	Outliers	ND	WRS	Result
Al	N(0.907)	32	None		22	
As	NP	26.5	None		16.5	
Ba	N(0.983)	26	None		16	
Be	N(0.983)	29.5	None		19.5	
Cd	N(0.963)	26	None		16	
Ca	N(0.916)	26	None		16	
Cr	LN(0.897)	32.5	None		22.5	
Co	N(0.904)	27	None		17	
Cu	NP	21	None		11	
Fe	N(0.926)	31.5	None		21.5	
Pb	N(0.930)	21	None		11	
Mg	N(0.907)	38.5	None		28.5	
Mn	N(0.894)	30.5 (38J); none if LT			20.5	
Hg	N(0.906)	24	None		14	
Mo	NP	24	None	2/2	14	
Ni	N(0.922)	23.5	None		13.5	
K	N(0.903)	24 (378)			14	
Se	NP	23.5	None		13.5	
Ag	N(0.951)	21	None		11	
Na	N(0.904)	25	None		15	
Tl	N(0.917)	32.5	None		22.5	
Th	N(0.931)	45	None		35	Muck high
Ti	LN(0.907)	36.5	None		26.5	
W	N(0.897)	21 (1.3); none if LT		2/1	11	
U	LN(0.957)	32.5 (2.2); none if LT			22.5	
U-alpha	N(0.914)	40	None		30	
U-235	LN(0.954)	33 (0.014); none if LT			23	
U-238	LN(0.956)	32.5 (2.2); none if LT			22.5	
V	N(0.975)	21.5	None		11.5	
Zn	N(0.928)	25	None		15	
Zr	N(0.923)	34	None		24	

No data for several parameters in the muck set, so no comparison made for those analytes:

Benzo(b)flouranthene	NP	24	None	6/3	14
Benzoic Acid	NP	36.5 (4520, 3660, 1880)	4/2		26.5
Diethylphthalate	NP	24 (15700, 940); only 15700 if LT	8/2		14
Fluoranthene	NP	24	None	5/3	14
Methylphenol	NP	23.5	None	4/2	13.5
Phenanthrene	N(0.920)	26	None	2/1	16
Phenol	LN(0.961)	22 (2010); none if LT	7/1		12
Pyrene	NP	23	None	3/3	13

Dist(SW-W) = distribution with Shapiro-Wilk W-statistic in parentheses - W(crit) with 15 samples is 0.881 at 95% confidence

WRS = Wilcoxon Rank Sum Test Statistic - critical range for 4 site and 11 background samples is 9 to 35 at alpha of 0.05

WRS result within the critical range except where noted

ND - number of non-detects in each subsample - peat/muck - left blank if no non-detects in either subset.